



Web Ready 16 Channel H.264 DVR Security System

w/ iPhone and Blackberry Access and 8 Hi-Res Indoor/Outdoor
Night Vision Surveillance Cameras

**EASY
setup**



INSTRUCTION MANUAL v1.1

NEED HELP?



NEED HELP?

PLEASE DO NOT RETURN THIS PRODUCT TO THE STORE

Please contact a DEFENDER customer support representative first regarding any additional information on product features, specifications or assistance with setup. You can contact us via one of the methods below:



Email:
support@defender-usa.com

Online live web chat:
www.defender-usa.com/support



Toll free fax:
1.888.771.1701



Toll free telephone:
1.866.946.7828

Note: *This is manual version 1.1 for this product. You may find updated versions by visiting our website at www.defender-usa.com*

WARRANTY INFORMATION

PRODUCT WARRANTY INFORMATION

Please visit our website at www.defender-usa.com for information about your product's warranty.

We take quality very seriously. This is why all of our products come with a one year warranty from the original purchase date against defects in workmanship and materials. If you have warranty or support issues please contact us using any of the following methods:

Phone: 1.866.946.7828

Fax: 1.888.771.1701

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Warranty Terms

1. Defender products are guaranteed for a period of one year from the date of purchase against defects in workmanship and materials. This warranty includes but is not limited to the repair, replacement or refund of the purchase price at Defender's option.
2. This warranty becomes void if the product shows evidence of having been misused, mishandled or tampered with contrary to the applicable instruction manual.
3. Routine cleaning, normal cosmetic and mechanical wear and tear are not covered under the terms of this warranty.
4. The warranty expressly provided for herein is the sole warranty provided in connection with the product itself and no other warranty, expressed or implied is provided. Defender assumes no responsibilities for any other claims not specifically mentioned in this warranty.
5. This warranty does not cover the shipping cost, insurance or any other incidental charges.
6. You **MUST** call Defender before sending any product back for repair. You will be sent a Return Authorization form with complete return instructions. When returning the product for warranty service, please pack it carefully in the original box with all supplied accessories, and enclose a copy of your original receipt, the completed RA form, and a brief explanation of the problem (include RA #).
7. This warranty is valid only in Canada and the continental U.S.
8. This warranty cannot be re-issued.

TABLE OF CONTENTS

INTRODUCTION	7
WHAT IS INCLUDED	8
FEATURES.....	8
ADDITIONAL ACCESSORIES.....	10
BUTTONS & CONNECTIONS	10
Front Panel.....	10
Back Panel.....	11
Remote Control.....	11
PTZ Connection	12
Alarm Connection.....	12
THINGS TO CONSIDER BEFORE INSTALLATION.....	13
CAMERA INSTALLATION	13
Mounting	13
Wiring	13
CONNECTING ADDITIONAL DEVICES TO THE DVR.....	14
USB Mouse	14
RCA Monitor	15
VGA Monitor	15
Router.....	16
CONNECTING AND POWERING ON	16
GETTING STARTED	17
Using the Mouse.....	17
Screen Viewing	17
Pop up Menu Bar	17
Pop up Menu Icons.....	17
MAIN MENU	18
CAMERA SETUP	19
Camera	19
Video Adjust.....	19
Camera Title.....	19
Display.....	20
Dwell Time	20
PTZ SETUP	20
PTZ controls	21
MOTION DETECTION.....	21
Setting Motion.....	22
Motion Detect.....	22
Buzzer	22
Sensitivity	22
Motion Area	22
RECORDING SETUP	23
Resolution	23
PPS	23

TABLE OF CONTENTS

Alarm Record	24
Alarm Record Duration	24
Record Quality	25
Alarm Record Quality	25
Record Mode	25
Audio Record	26
Schedule Setup	26
ALARM SETUP	27
External Alarm Mode	28
Alarm Display	28
Video Loss Detect	28
Event Log Setup	28
Buzzer Time Setup	29
Relay Time Setup	29
HARD DISK MANAGEMENT	30
Overwrite Mode	30
HDD Information	31
HDD Format	31
NETWORK SETUP	32
Terms	32
PPPoE	33
DDNS Setup	34
RTSP	34
Mail Function	34
FTP	36
BACKUP SETUP	37
USB Backup	37
DVD/CD Backup	38
SYSTEM SETUP	39
Date/Time	39
System Type	40
Key Board Lock	40
ID Number	40
Display Setup	40
Language	41
Password	41
Firmware Upgrade	41
Load Default	41
Load Backup USB	42
Daylight Savings Time	42
LIVE VIEWING	43
HDD and USB Information	43
Call Up USB Information	43

TABLE OF CONTENTS

Digital Zoom	43
Audio	43
PLAYBACK	44
CONTROLS	44
Time Search	45
Event List Search	45
BACKUP VIDEO PLAYBACK	46
Software	46
Buttons and Connections	47
NETWORK GUIDE	48
Requirements	48
Finding IP Address	48
PREPARING YOUR COMPUTER TO VIEW YOUR DVR	48
Method 1	49
Method 2	50
VIEWING YOUR DVR ON YOUR COMPUTER	50
Login	51
ActiveX Installation	51
VIEWING YOUR DVR OUTSIDE OF YOUR NETWORK	52
Port Forwarding	52
Finding External IP Address	52
Testing	53
Troubleshooting	53
DDNS CONFIGURATION	54
DDNS.org	54
DDNS Account Setup	55
NETWORK VIEWING AND PLAYBACK	56
SOFTWARE	56
Online Software Icons	56
Time Point Backup	58
Record	58
Screen Information	58
DVR CONFIGURATION OPTIONS	59
System Options	59
Network Options	60
Other Options	62
3G MOBILE DEVICE PORT FORWARDING	62
SETTING UP PORT FORWARDING	62
Troubleshooting	63
MOBILE VIEWING INSTALLATION GUIDE	64
TROUBLESHOOTING GUIDE	70
SPECIFICATIONS	72
CAMERA MANUAL	75

INTRODUCTION

Congratulations on your purchase of the SN501-16CH! Using the most advanced video compression, H.264, your home or business will benefit from around the clock surveillance adding extra security to your valuables. H.264 compression allows you to record and store more footage using less space, so you will never miss an important event. This manual was written to ensure that you get the most out of your SN501-16CH DVR.

WHAT'S INCLUDED



16CH DVR with
500 GB HDD



Indoor/Outdoor Night
Vision CCD Cameras



Four to One Power
Supply for Cameras



USB Mouse



IR Remote Control



RCA to BNC
Connectors



Software CD



10ft RJ45
Ethernet Cable



60ft 4 PIN DIN to RCA (male)
Video/Power Wires

- 10 ft Power Adapter for DVR
- 4 Window Warning Stickers
- 1 CR2025 Battery for Remote (installed)
- 1 x 25 pin D-SUB adapter for Alarm Input and Relay

- 1 Power Adapter for DVR
- 24/7 Lifetime Live Customer Support
- Instruction Manual
- Quick Start Guide
- 1 Year Warranty
- 1 x 9 Pin D-SUB adapter for PTZ cameras

FEATURES

Smartphone Compatible¹

Access live video footage directly from your iPhone, BlackBerry, or other smartphone. This DVR uses 3G technology, which is specifically designed to transmit high quality video and audio on your smart phone. Your DVR can also be set up to email your hand-held whenever specific activity occurs, such as motion detection.

View Video Online with No Service Fees² (Supports DDNS)

Regardless of where you are in the world, you can view your DVR's live or recorded video footage on any Internet accessible computer³ with Internet Explorer. See what is happening on your property and check in on your employees or family members.

Record Over 2 Years of Video Footage

The 500GB hard drive can hold over 2 years of continuous video⁴ and is optimized for 24/7 surveillance. We only use hard drives that are specifically designed for high capacity writing, which ensures long product life and accurate video data storage. Your DVR will alert you when your memory space is full so that you can overwrite your old video, stop the unit from recording, or backup and transfer your video footage.

Cutting Edge H.264 Compression

The SN501-16CH-007 utilizes H.264 compression—the latest and most advanced compression level available for a DVR system. You will see an amazing picture but save almost 50% on storage space versus DVRs with MPEG-4 compression! H.264 maximizes your hard drive space.

24/7 Lifetime Live Customer Support

Assistance is available whenever you need it. Simply visit www.defender-usa.com for video networking guides, simple tips on how to protect your property, and instructional videos on topics such as camera placement. Our customer support team can be reached by phone 24/7, or by email and live web chat services so that you will always have access to an expert.

Stay Notified with Email Alerts

This system keeps you notified of events occurring in your monitoring location. You can set the unit to automatically send alerts to your email inbox whenever motion is detected or when cameras lose power. Up to seven different email addresses can receive these alerts.

8 Professional Grade Weatherproof Cameras

Eight high resolution color cameras provide you with a clear and consistent picture at 420 TV lines of resolution. They allow you to better distinguish facial features, which can help in the positive identification of individuals. The cameras can be used indoors and outdoors. Each one is built with professional grade aluminum housing and a sunshade to help prevent glare, deterioration and rusting.⁵

View in the Dark with Automatic Night Vision

The cameras come equipped with night vision, allowing you to see any monitored area (up to 15ft away!⁶) in total darkness. Each camera has 12 infrared LEDs that activate automatically when it becomes dark and deactivate during the day to save energy. You will always be able to see what is happening in your yard or at your business after-hours.

Advanced Motion Activated Recording

You have the option to record video only when motion is detected. Finding important video footage using the playback feature is easy, and will also save you time and conserve hard drive space. You can even set individual cameras to detect motion while the others continuously record. Advanced motion detection settings ensure that false alarms are not triggered—the easy motion detection “mask” allows you to block out areas with constant movement, such as roads or blowing trees so that only suspicious activity is recorded.

Connect Easily to Your Computer Monitor

This DVR includes a VGA output which allows you to connect to a computer monitor for viewing purposes. This gives you another option when viewing the activity captured by your cameras.

FEATURES

Multiple Easy Backup Options

You have several ways to backup your important video footage. A built-in USB port gives you the option of backing up and transferring your video footage with a USB flash drive or external USB hard drive.⁷ You can connect an external CD/DVD writer and burn your footage to disk. Another great option is the ability to send your video footage to an FTP site. Your video footage then becomes portable for easy viewing and archiving on any PC.

Expandable System up to 16 Cameras

As your business grows, so can your security system. If you are looking to boost your security and monitor more areas, you can add up to eight additional cameras for more robust monitoring. Any camera with a power supply and a RCA or BNC connection is compatible. Cameras in this system have the model number SP301-C.

Included Mouse and Remote

Navigate the onscreen menu with ease using the USB mouse and IR remote control.

Password Protection

Ensure that only authorized users can change DVR settings or halt recording.

24/7 Scheduled Recording

You can fully customize a weekly recording schedule. You can choose which days of the week and hours of the day you want to continuously record, motion record, alarm record, or not record at all. Each camera can be scheduled with different settings.⁸

Customize Your Camera Display

Display 4 cameras in a quad screen, an individual camera in full screen, or see a 9, 13 or 16 channel split screen if you have additional cameras. Zoom mode allows you to enlarge a portion of the camera's view to get a closer look, and Sequence mode cycles through all camera views at preset interval times.

Search by Date, Time, or Event

Simply choose the desired date and time range, and the requested video clips will appear. Clips are also labeled by event, which makes it easy to find footage that was captured by motion detection.

Endless Location Options with 4 Extra Extension Wires

We've included four extra 60ft extension wires so that you can maximize the distance between your cameras and the DVR. (Wire Model #: DF10W)

ADDITIONAL ACCESSORIES



• SP301-C (Camera)

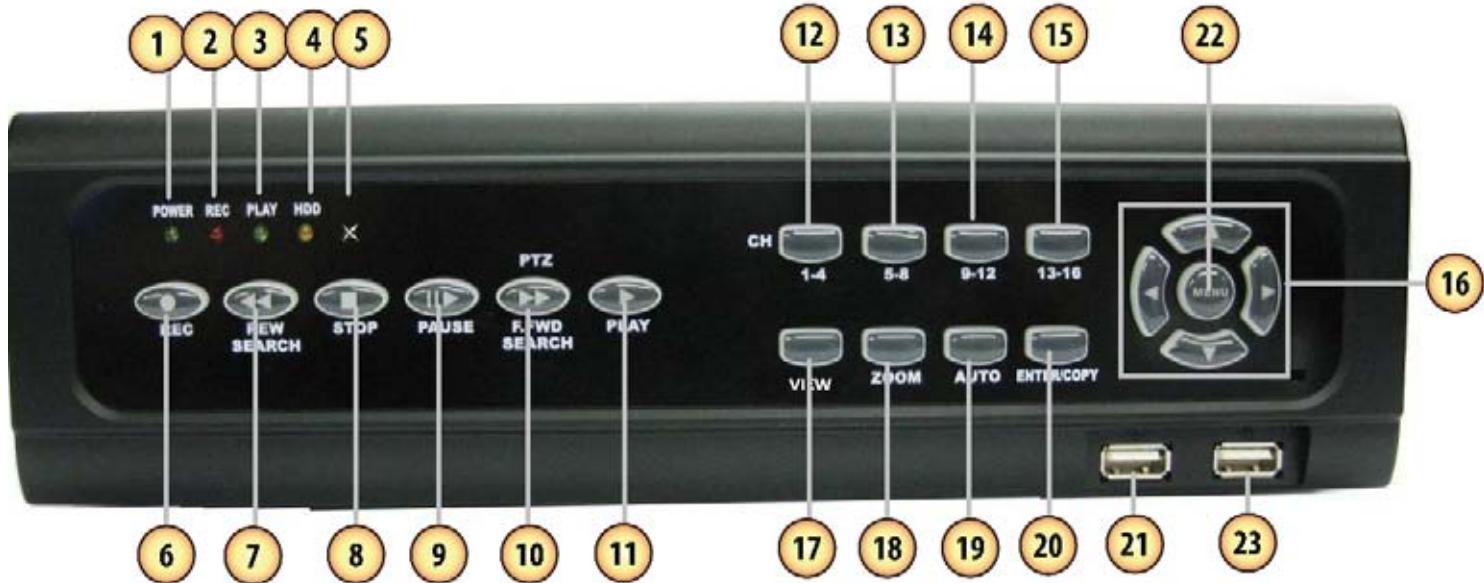


• DF10W (60 ft. Camera Extension Cable)

For more information or accessories please visit: www.defender-usa.com

BUTTONS AND CONNECTIONS

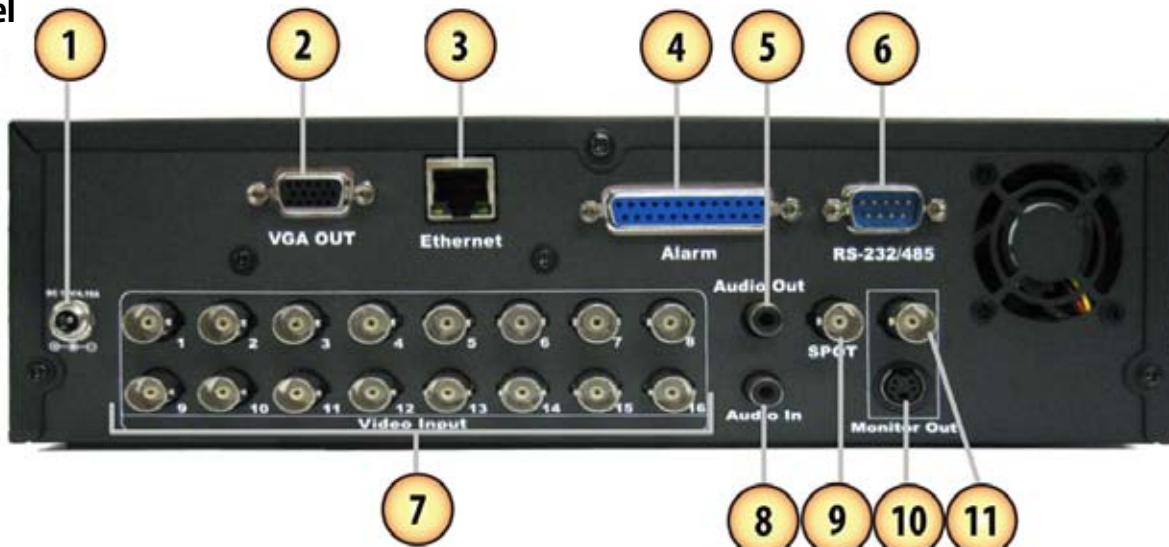
Front Panel



1. **Power LED** – Indicates the DVR is properly powered on
2. **Rec LED** – Indicates the DVR is in Recording mode
3. **Play LED** – Indicates the DVR is currently in Playback mode
4. **HDD LED** – Indicates there is harddrive activity. This could indicate recording or playback
5. **IR Sensor** – Detects IR remote control
6. **Record button** – Pressing this button prompts DVR to record according to the record schedule
7. **Rewind/search** – Rewinds playback footage and prompts search menu to playback footage
8. **Stop** – Stops playback footage and recording
9. **Pause** – Pauses Playback footage
10. **Fast Forward/search** – Fast forwards playback footage. Prompts PTZ controls in live view mode
11. **Play** – Prompts Playback/search menu to playback footage
12. **1-4** – Pressing this scrolls through channels (cameras) 1 – 4 one at a time
13. **5-8** – Pressing this scrolls through cameras 5-8 one at a time
14. **9-12** – Pressing this scrolls through cameras 9-12 one at a time
15. **13-16** – Pressing this scrolls through cameras 13 – 16 one at a time
16. **Directional buttons** – Moves the cursor up, down, left and right
17. **View** – Pressing this button scrolls through different display options (four cameras, nine cameras, thirteen cameras and sixteen cameras)
18. **Zoom** – Pressing this turns the zoom function on
19. **Auto** – Pressing this prompts the DVR to sequence through the cameras
20. **Enter/copy** – Select button, in playback mode copy starts and stops backup
21. **USB connection** – Used to connect external CD burner or USB drive for backup
22. **Menu Button** – Opens and exits the main menu
23. **USB mouse connection** – Connect USB mouse to this connection

BUTTONS AND CONNECTIONS

Back Panel



Remote Control



1. **Auto** – Pressing this prompts the DVR to sequence through the cameras
2. **Record** - Pressing this button prompts DVR to record
3. **1-16 – Camera buttons** – Shows the individual camera on screen
4. **Menu Button** – Opens and exits the main menu
5. **Zoom** – Pressing this turns the zoom function on
6. **ID** – Displays the DVR IR number on screen. Used to identify the DVR if multiple DVR's are used
7. **Enter** – Select button/Confirm Changes
8. **Directional buttons** – Moves the cursor up, down, left and right
9. **PTZ** – Turns on PTZ (Pan tilt zoom) camera controls in live view mode (PTZ camera not included)
10. **View** – scrolls through the different camera views (4/9/13/16)
11. **Rewind** – Rewinds playback footage
12. **Fast forward** – Fast forwards playback footage
13. **Play** – Prompts and Playback/search menu to playback footage
14. **Stop** – Stops playback footage and recording
15. **Pause/Step Back** – During playback, pressing this button will pause the footage. Pressing it a second time will step back the video footage a few minutes
16. **Pause/Step Forward** – Pauses playback footage and pressing this button again will step forward the time by a few minutes

BUTTONS AND CONNECTIONS

PTZ CONNECTION

9 PIN D-SUB adapter for PTZ cameras:

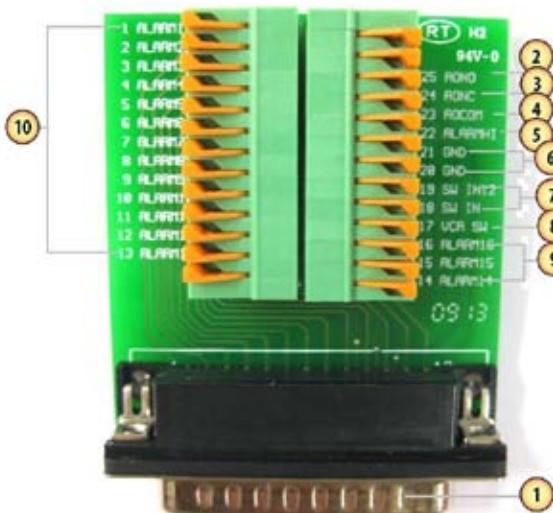


1. **9 PIN D-SUB MALE Connection** - Connects into RS 232/485 Port on the back of DVR
2. **Connection for a RS 232 PTZ Camera**
3. **Connection for a RS 485 PTZ Camera** - Using the "T" and "R" connections
4. **Connection for a RS485 PTZ Camera** - Using the "D+" and "D-" connections

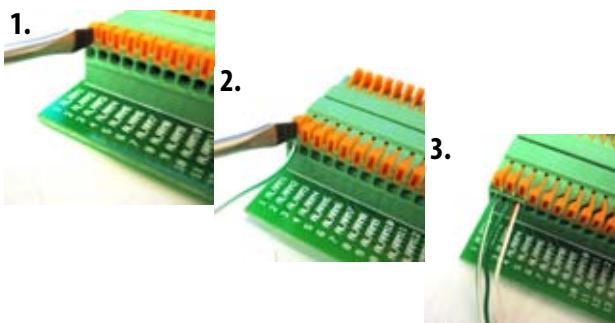
For more information on how to setup and use the PTZ camera with the DVR please see PTZ Setup. Refer to the PTZ camera manufacturer instructional manual for the required connections and settings.

ALARM CONNECTION

25 PIN D-SUB adapter for alarm input and relay:



1. **25 PIN D-SUB MALE Connection** - Connects to alarm port on the back of DVR
2. **AONO** - Alarm output normally open
3. **AONC** - Alarm output normally closed
4. **AOCOM** - Alarm Open Common
5. **AlarmHI** - Alarm reset connection
6. **GND** - Ground connections for alarm input
7. **SW IN/SW IN12** - This function does not apply to this DVR
8. **VCR SW** - This function does not apply to this DVR
9. **Alarm 1-13** - Connection for 13 different alarms
10. **Alarm 14-16** - Connection for 3 more alarms



To connect a two wire alarm:

1. With a small object such as a flat head screwdriver push the orange tab back away from the circular opening.
2. Insert the wire into the hole below the orange tab while it is still pushed back.
3. Release the orange tab, which will lock the wire into place. Pull lightly on the wire to make sure it is secure.

CAMERA INSTALLATION

- The camera should be installed between 8 and 13ft above the area to be monitored
- Ensure there are no obstructions in the camera's view, to maximize viewing area
- Ensure that the sunshade is positioned to avoid glare and position camera away from direct sunlight or indoor lighting
- Decide whether the camera will be wall-mounted, ceiling mounted or sit on a desk/table top. If you are mounting the camera on a wall or ceiling, use the mounting hardware in the package. We recommend that the mounting bracket is secured using the included screws for all installations
- Each camera comes with 60ft of video/power wire, and there are also four 60ft extension wires included. Please make sure that you mount four cameras no more than 60ft from the TV/monitor/VCR/DVR and the other four no more than 120ft away from the TV/monitor/VCR/DVR. If longer wiring distance is required for additional cameras, 60ft extensions can be purchased (DF10W) from your local re seller or at www.defender-usa.com
- We recommend using a surge protected power bar to protect the cameras internal circuitry

MOUNTING

1. Decide if the camera will be wall-mounted or sit on a desk/tabletop. The camera can be adjusted for either mounting scenario by rotating it to the required position.
2. Screw the mounting bracket into the camera's mounting hole, turning it clockwise.
3. Mount the camera in the desired location no more than 60 ft from the DVR unless you have purchased additional wiring. You may wall, ceiling or desk mount these cameras.
4. Adjust cameras to the desired viewing angles.

For more information on camera location go to: www.defendercollege.com



WIRING

1. Plug the 4 PIN DIN female connection on the camera into the 4 PIN DIN male connection on the 60ft video/power wire.



3. Plug the camera's power adapter into an AC outlet or power bar.



2. Plug the included four to one power supply into the camera power adapter then into the red power jack located on the 60 ft video/power wire.



4. Attach the BNC to RCA connectors to the video inputs on the back of the DVR.



CAMERA INSTALLATION

5. Connect the male RCA plug from the 60 ft cable to the BNC to RCA connector.
6. Repeat the above steps for all of the included cameras.

Note: For detailed instructions and information on the cameras included with this system, please refer to the Camera specifications on Pg. 63.



CONNECTING DEVICES

This DVR has multiple connections which allow you to integrate additional DEFENDER or third party devices to the system. Please note that there are many makes and models of compatible devices and the instructions below may not be applicable to your device. Always refer to the device instruction manual for proper setup and operation.

CONNECTING A USB MOUSE

It is recommended to connect the included USB mouse before powering on the DVR. This will speed up the initializing process as well as make the DVR easier to use.

1. Plug the USB connection on the mouse into the USB connection on the front right of the DVR.



Note: This Manual was written with the mouse being the main tool for navigation.

CONNECTING DEVICES

CONNECTING A MONITOR TO THE DVR (RCA COMPOSITE)



1. Connect a BNC to RCA connector to the MONITOR OUT connection on the back of the DVR.
2. Plug the RCA cable into the BNC connector.
3. Attach the other end of the RCA cable to a yellow RCA video input on your monitor.
4. Switch the TV/Monitor source to view the DVR.

Note: If the monitor has multiple video inputs then the video source will need to be switched to watch the DVR. Example: If the DVR is connected to Video 2 then press the TV/Video, Input, or Source button on the TV/Monitor to switch to Video 2.

CONNECTING A MONITOR TO THE DVR (VGA)

1. Connect one end of a VGA cable (not included) to the VGA OUT connection on the back of the DVR.
2. Plug the other end of the VGA cable to a VGA input on your TV/monitor.
3. Switch the TV/monitor source to view the DVR.



Note: If the monitor has multiple video inputs then the video source will need to be switched to watch the DVR. Press the TV/Video, Input, or Source button on the TV/Monitor to switch to VGA or PC input.

CONNECTING YOUR ALARM SYSTEM TO THE DVR

The SN501-16CH supports a 2 wire (normally open or normally closed) connection for up to sixteen external alarm devices simultaneously using the included alarm adapter. For more information on setting up the DVR to work with these alarms please see "buttons and connections." Please see your alarm device manufacturer for further instructions on required connections and settings.

CONNECTING DEVICES

CONNECTING YOUR DVR TO THE ROUTER

1. Power off the DVR by removing the power cable from the back of the DVR.
2. Connect the included network cable to the back of the DVR in the "Ethernet" port (LAN).
3. Connect the other end of the network cable to an available port on the router. The ports should be labeled 1-4, or 1-8.
4. Power on the DVR by reconnecting the power cable on the back of the DVR.

Note: *If you look at the router there should be a green "link" light indicating that the DVR is properly connected to the port that it was plugged into. There will also be an amber and green "link" light to the right of the Ethernet connection on the back of the DVR to indicate a proper connection to the router. If both "link" lights are illuminated, the DVR is properly connected to the router and you can proceed with the next step.*



POWERING ON THE DVR



1. Insert the power cord into the power supply.
2. Plug the power cord into a power outlet.
3. Insert the power supply wire into the rear DC 12V port on the DVR.
4. The DVR will turn on and display the main viewing area after a few moments of initializing.

Note: *We recommend using a surge protected power bar and/or Uninterrupted Power Supply (UPS) backup to prevent damage to your DVR system.*

GETTING STARTED

Now that you have powered up the DVR and properly connected to a TV or monitor you are ready to begin using and customizing the DVR for your specific needs. The DVR will automatically begin recording once it has been powered on and initialized. Initializing the DVR is the normal start up process and can take a few moments.

Using the Mouse

- The included USB mouse makes using the SN501-16CH simple and efficient. Make sure that the mouse is connected to the front right USB port *before* powering on the DVR
- All functions of the mouse are applicable to this DVR, including using the wheel and right and left clicking

Screen Viewing

By double clicking on one of the 16 cameras, the viewing mode will switch to full screen mode. When in full screen mode, scrolling the mouse wheel up or down will move you from one camera to the next.

POP UP MENU BAR

Menu options will automatically appear on the bottom of the screen when you move the mouse cursor near the bottom of the screen. More information can be found in the POP UP MENU BAR section.

The following menu options appear from left to right:

1. Menu – calls up the Main Menu
2. PTZ Control – controls the PTZ cameras (PTZ camera not included)
3. HDD & USB Information (total size, capacity remaining)
4. Digital Zoom – digitally zoom on a specific area
5. Audio Control – enables or disables the audio
6. Auto Sequence – automatically switches between camera



Channels in live viewing mode.

7. Quad screen viewing mode
8. 9 – Camera view
9. 13 – Camera view
10. 16 – Camera view
11. Manual Record
12. Stop - stops playback or manual record
13. Play Search – calls up the play search menu

GETTING STARTED

ADJUSTING REMOTE CONTROL FOR OTHER DVRS

If you have other DVRS, you can set the remote control to work with multiple DVRS, this is good if you have more then one DVR hooked up in your home or business.

Setting Remote for other DVRS:

1. On your DVR, the screen will read **ID: AA IR: BB**.
2. "AA" represents the ID number of the DVR you are using. This is set in the "system setup" menu.
3. "BB" represents the ID number of the DVR that the remote control is currently controlling.
4. To change which DVR your remote is controlling, press the "ID" button on your remote control.
5. Once pressed, the option to change your IR number will come up.
6. Set which DVR ID number you want your remote to control and press "enter".
7. The remote will now ONLY work for the set DVR with the same ID number as the set IR number.



MAIN MENU

The main menu consists of nine options:



	1. Camera Setup		4. Alarm Setup		7. Backup Setup
	2. Motion Setup		5. HDD Management		8. System Setup
	3. Record Setup		6. Network Setup		9. Exit

MAIN MENU

As you navigate through the Menu of the DVR, you will notice that most fields are adjustable. If the Menu setting has to the right of it, you can adjust the value by either using the left and right directional buttons, or scrolling up or down with the mouse wheel. If the Menu setting has next to it, you can select this button by pressing ENTER or by clicking on the SET button with the mouse. Clicking SET will enter a sub menu which will allow you to adjust sub-settings for the DVR.

Note: The button works as the enter key. This must be pressed to save changes. The works as the escape button, and when pressed will exit the screen and not save any changes.

To call up the Main Menu:

The Main Menu can be called by 2 different options:

Option 1:

1. Press the Menu button the DVR front panel or on the remote control.

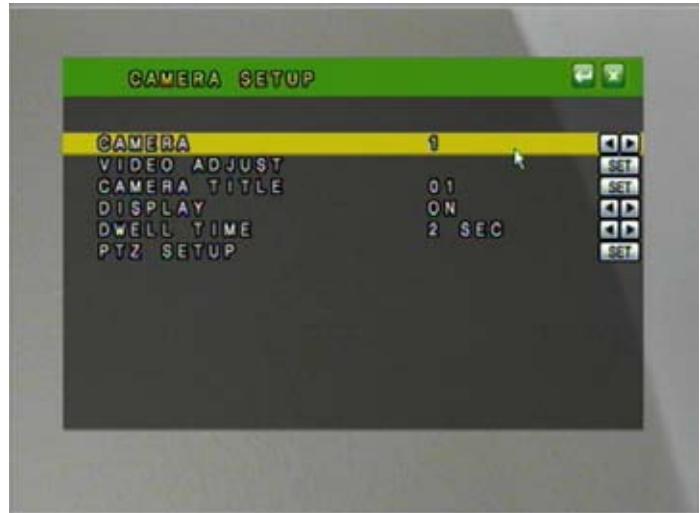
Option 2:

1. Scroll the mouse to the bottom of the screen to reveal Pop Up Menu Bar.
2. Click the to call up the Main Menu.

MAIN MENU



Camera setup allows you to make adjustments to your cameras individually. A description of the adjustable fields will be found below.



CAMERA

1. To choose which camera you want to work with highlight CAMERA so that the background is yellow and use the mouse wheel or directional keys to scroll to the camera you wish to adjust.
 - As you change cameras, the settings for each camera will be displayed along with it

VIDEO ADJUST

Video adjust allows you to control the contrast, brightness, hue, color, and sharpness of the your cameras. Use the arrow keys or scroll wheel to adjust the desired settings. This is particular to only one camera at a time.

When you adjust the settings to your liking:

Press ENTER or Click to save changes, and EXIT or Click to return to Menu without saving.

CAMERA TITLE

Allows you to name each camera/channel for easy identification.

1. When you have selected the correct camera you wish to adjust, select **SET** to call up the virtual keyboard.
2. Use the keyboard to enter your new camera name. Note that the camera title can be up to 8 characters long.
3. Select ENTER to confirm changes and exit the keyboard.
4. Press ENTER or Click to save. To exit without saving click the X to exit or Press Menu.



What the buttons mean:

Mostly all of the characters you see on the virtual keyboard will display as seen on the screen. Below are the functions of the special buttons that have a different purpose.



Backspace



Confirms changes and exits keyboard



Changes from lower case to upper case (allows you to pick between the "+" and the "-")



Puts a space between characters

MAIN MENU

DISPLAY

You can choose whether or not to display any individual camera. By setting the display to OFF the camera will not be displayed in live viewing, however the camera channel will continue to record as per the defined recording settings. The video will be displayed during playback.

DWELL TIME

Dwell time refers to the amount of time the footage from a particular camera will be displayed when you're in auto sequence mode. You can set the dwell time for each camera individually. The auto sequence mode can dwell on one camera from 0-99 seconds.

To Set Dwell Time:

1. Highlight the camera you wish to setup.
2. Highlight dwell time.
3. Use the mouse wheel or directional arrows to set the time (in seconds) that each particular camera will stay on the screen when in auto sequence mode.
4. Repeat steps 1-3 for each camera.
5. Press Menu or Click  to save settings and return to the Main Menu or press  to exit to the Main Menu without saving.

The DVR will take a few moments to save the settings.

To Enter Auto Switch Mode:

1. Scroll mouse to the bottom of the screen to reveal the pop up Menu.
2. Click the auto sequence icon. 

The DVR will begin automatically switching between the active cameras according to your dwell time settings.

PTZ SETUP

This DVR supports Pan, Tilt, Zoom (PTZ) or "Dome" cameras, which are not included.

The PTZ camera must use RS-485 and one of the supported protocols (See Specifications). For instructions on setting up your PTZ cameras please refer to the instruction manual for the PTZ camera or contact the PTZ camera manufacturer.

Left-Right Speed: Controls the speed at which the DVR will move the PTZ camera horizontally: "#" is the slowest speed and "# # # # #" is the fastest.

Up-Down Speed: Controls the speed at which the DVR will move the PTZ camera vertically: "#" is the slowest speed and "# # # # #" is the fastest.

Auto Speed: Can be used if the PTZ supports preset positions. Auto-speed will control the speed which the camera will move through the preset positions.

Baud Rate: This is a camera specific setting defined by the manufacturer. Please consult your PTZ camera manual or manufacturer for details on this setting.

Protocol: This is a camera specific setting defined by the manufacturer. Please consult your PTZ camera manual or manufacturer for details on this setting. Supported protocols can be found in the specifications.

MAIN MENU

PTZ Control from Live Viewing Mode

To access the PTZ controls of the DVR you will need to use the mouse.

1. Move the mouse cursor to the bottom the screen for Pop Up Menu Bar to display.
2. Select the  icon.

The PTZ controls look like this:



Note: To exit the PTZ control center, right click the mouse.

Please review the following controls:



Direction Keys – move the camera up, down, left, or right



Zoom In/Zoom Out Keys

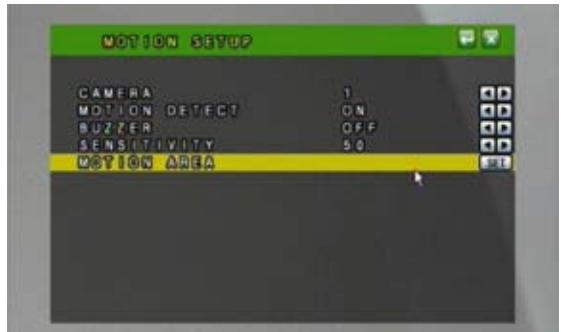
PRE: If the PTZ camera supports preset positions this option will allow you to save presets as well as go to one of the saved preset positions. Ex. You can set Preset Number 1 to view a front door, Preset 2 for the camera to zoom in on the front door, Preset 3 to change the angle of the camera to view the hall way by the front door, etc. This will save you from manually changing the position of the camera. A maximum of 128 Preset positions can be set.

Auto: Initiates the cameras auto sequence. This will usually consist of panning from side to side and tilting higher and lower.

MOTION DETECTION

1. Access the Main Menu.
2. Select the Motion Setup icon. 

You can set the DVR to detect motion for one or all of your cameras. When one of the cameras detects motion, the DVR will display an icon on screen indicating motion is detected. The DVR can also be configured to begin recording, make an audible beep, or send you an email notification when motion is detected. The event log will be updated with the motion detection event.



Note: Every time motion is detected an icon will appear, and the camera name from which motion is detected will change from white, to yellow.

MAIN MENU

TO SET MOTION DETECTION

1. Select the camera you wish to configure the motion detection for.
2. Use the mouse wheel, or the directional arrow buttons to toggle between ON and OFF.

MOTION DETECT

Motion detection can be set to ON or OFF. When set to ON, the DVR will recognize and perform specific activities when motion is detected based on your settings.

BUZZER

The Buzzer can be set to ON or OFF. When set to ON, an audible beep will be heard when motion is detected in this particular camera's field of view. Please refer to the BUZZER TIME SETUP in the ALARM SETUP section for more buzzer settings.

SENSITIVITY

Determines how sensitive the motion detection is. Use the mouse wheel or arrow keys to change the sensitivity value from 1 (least sensitive) to 100 (most sensitive).

MOTION AREA (Motion Area Masking)

You can configure each camera so that there are certain areas to detect and other areas to ignore where motion is detected.

For example, if you are monitoring your home, and there is a fan in the room, you can set the motion area to detect motion everywhere but where the fan is. This way motion detection will not accidentally be triggered and record insignificant movement.

Motion area is also helpful if you are monitoring outside near a street where there is a lot of traffic driving by. You can set your DVR to not detect motion in the area where the traffic is but only when a vehicle turns into the driveway.

To Setup a Motion Area:

1. Choose which camera you wish to setup by using the mouse wheel or directional arrows.
2. Select **SET** for Motion Area.

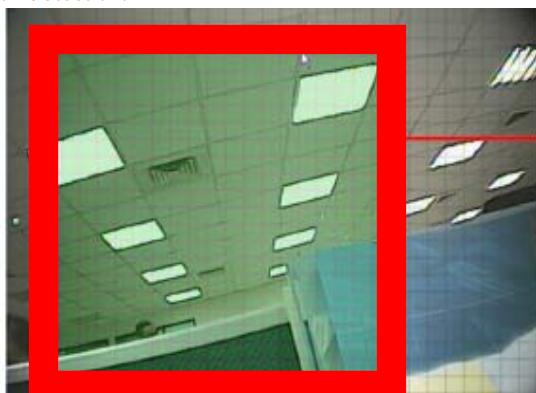
By default the entire grid (30 x 24) is set to detect motion. Here you choose whether to select the motion detection area or to clear a section of the grid to not detect motion. Sections of the grid that are shaded green will not trigger motion detection.

There are three Menu options while in the grid view which can be accessed by either right clicking the mouse or pressing the Menu button.

1. **Select:** Used to select areas you wish to trigger motion detection.

2. **Clear:** Used to mask off certain areas you do not want to trigger motion detection.

3. **EXIT:** Saves changes and exits the MOTION DETECTION SETUP MENU.

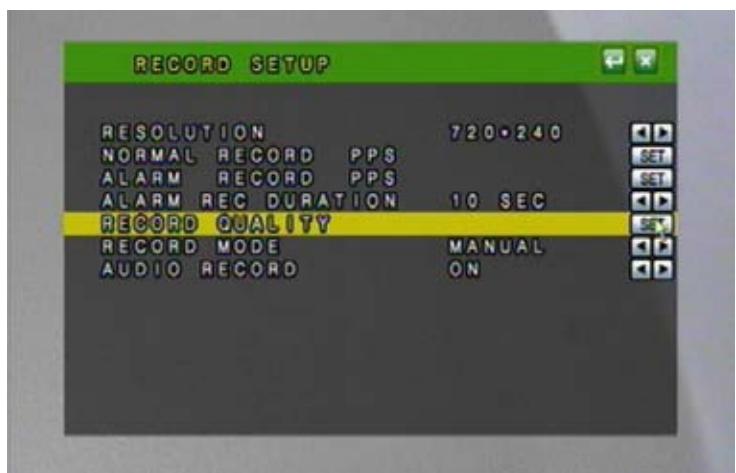


The squared off area shows the area with no detection (would be shaded green)

MAIN MENU

RECORDING SETUP

1. Access the Main Menu.
2. Select the Record Setup icon. 



RESOLUTION

You can set the resolution to:

NTSC Mode

1. 720 x 240 (max 60 PPS)
2. 360 x 240 (max 120 PPS)

PAL Mode

1. 720 x 288 (max 50 PPS)
2. 360 x 288 (max 60 PPS)

Note: NTSC is the video standard for North America. Europe and other countries use the PAL video standard. NTSC videos or cameras will not work on PAL television sets or monitors.

Changing the resolution will affect the picture quality. A higher resolution will produce a better quality picture; however, footage recorded in a higher resolution will take up more space on the hard drive. The higher the resolution causes the maximum number of PPS (pictures per second) to be lowered.

PPS

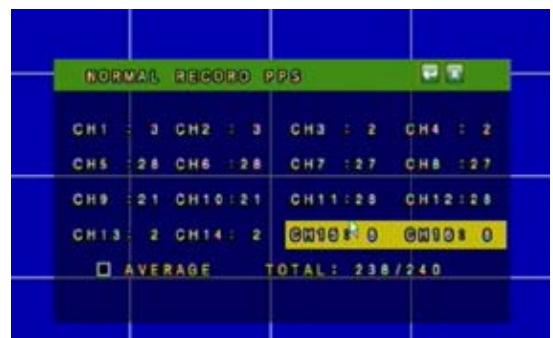
PPS stands for Pictures Per Second and refers to how many pictures will be captured in 1 second. The more PPS, the smoother the video, and the less PPS the more choppy the video will appear.

Normal Record PPS will adjust the PPS for Full record and Manual Record mode.

Alarm Record PPS will adjust the PPS for motion detection and external alarm detection. Generally the normal record PPS will be lower to minimize the amount of HDD space used when non-important events are happening and the alarm record PPS is higher to use smooth video recording when motion or alarms are triggered.

To Change the Normal Record PPS:

1. Select **SET** to set the Normal Record PPS.
2. Use the mouse wheel or the directional buttons to adjust the PPS, the maximum PPS per camera is 30 PPS.
3. When in 720 x 240, you can change each camera's PPS individually, and you have 120 PPS to distribute between the attached cameras.
4. When in 360 x 240 the Normal PPS will change by two channels at a time (1 and 2, 3 and 4, 5 and 6 etc...) You will have a total of 240 PPS to distribute across the attached cameras.
5. Press ENTER or Select  to save settings and return to record setup menu.
6. Exit the record setup menu to save changes.
7. Exit the main menu . The DVR will take a few moments to load the settings.



Note: For each setting, you can also click the 'Average' box at the bottom of the menu screen to divide the PPS evenly across all of the attached cameras. If no cameras are attached the average option will not distribute the PPS to any camera.

MAIN MENU

ALARM RECORD PPS

You can change the PPS for alarm record. You may wish to change the alarm PPS so that there is a higher PPS for when an alarm (e.g. motion) is detected by the DVR and a lower PPS for Normal Record.

ALARM RECORD PPS								
CH1	: 30	CH2	: 30	CH3	: 4	CH4	: 4	
CH5	: 30	CH6	: 30	CH7	: 26	CH8	: 26	
CH9	8	8	CH10	8	CH11	: 0	CH12	: 0
CH13	: 3	CH14	: 3	CH15	: 4	CH16	: 4	
<input type="checkbox"/> AVERAGE				TOTAL : 210 / 240				

To Change the Alarm Record PPS:

1. Select **SET** to adjust the Alarm Record PPS.
2. Use the mouse wheel or the directional buttons to adjust the PPS, the most PPS per camera is 30 PPS.
3. When in 720 x 240, you can change each camera's PPS individually, and you have 120 PPS to distribute between the attached cameras.
4. When in 360 x 240 the Alarm PPS will change by two channels at a time (1 and 2, 3 and 4, 5 and 6 etc...) You will have a total of 240 PPS to distribute across the attached cameras.
5. Press ENTER or select **←** to save settings and return to record setup menu.
6. Exit the record setup menu to save changes.
7. Exit the main menu **×** to save changes. The DVR will take a few moments to load the settings.
 - There is a total of 240 PPS (for 360 x 240) available to share between the 16 channels
 - There is a total of 120 PPS (for 720 x 240) available to share between the 16 channels

Note: By clicking the box next to the word 'AVERAGE' you can evenly distribute the PPS to all connected cameras for Normal PPS and Alarm Record PPS.

ALARM RECORD DURATION

Alarm Record Duration represents the length of time the DVR will record when it detects an alarm (motion, external alarm). You can set the Alarm Record Duration anywhere from 5 seconds to 99 seconds.

To set the Alarm Record Duration:

1. Highlight the Alarm Rec Duration option.
2. Use the mouse wheel or directional keys to change how long you want the DVR to record when an alarm is detected.
3. Press ENTER or Click **←** to save changes.
4. Click **×** to exit.
5. DVR may take a few moments to save the settings.

MAIN MENU

RECORD QUALITY

There are four levels of record quality you can choose from, and it is adjustable per camera if recording with 720 x 240 resolution. If using 360 x 240 resolution, cameras are adjusted in pairs (1 & 2, 3 & 4, 5 & 6 etc...):

1. Low
2. Medium
3. High
4. Best

To Change the Record Quality:

1. Highlight the record quality option and click **SET** to change the record quality.
2. Use the mouse wheel or directional keys to change the cameras record quality setting.
3. Press ENTER or Click the  to save changes and exit to Record Setup menu.
4. Press Menu or Click  to exit the Record Setup Menu.

RECORD QUALITY	
CH1 : LOW	CH2 : LOW
CH3 : LOW	CH4 : LOW
CH5 : LOW	CH6 : LOW
CH7 : MEDIUM	CH8 : MEDIUM
CH9 : LOW	CH10 : BEST
CH11 : LOW	CH12 : LOW
CH13 : MEDIUM	CH14 : MEDIUM
CH15 : BEST	CH16 : BEST
ALL : HIGH	

ALARM RECORD QUALITY

You can set the DVR to record with higher or lower picture quality when motion/alarms are triggered. The instructions are the same as above for adjusting normal record quality when adjusting alarm record quality. There are four levels of record quality you can choose from for when the alarm is triggered, each quality is adjustable per camera.

1. Low
2. Medium
3. High
4. Best

ALARM RECORD QUALITY	
CH1 : LOW	CH2 : LOW
CH3 : LOW	CH4 : LOW
CH5 : MEDIUM	CH6 : MEDIUM
CH7 : MEDIUM	CH8 : MEDIUM
CH9 : BEST	CH10 : BEST
CH11 : HIGH	CH12 : HIGH
CH13 : MEDIUM	CH14 : MEDIUM
CH15 : BEST	CH16 : BEST
ALL : HIGH	

Note: You can also adjust all cameras at once by using the option at the bottom of the screen and scrolling through

RECORD MODE

You can set your DVR to record based on a preset schedule you have created or to manually record when you desire. By default, the schedule is set to record 24/7 and will automatically start recording when powered up. You have a choice to configure up to 5 recording schedules. Only one recording schedule can be active at any given time.

To choose a recording schedule:

In the record mode area, use the mouse wheel or directional buttons to scroll through various recording modes: Schedule 1, Schedule 2, Schedule 3, Schedule 4, Schedule 5, or manual. The schedule that is displayed on the Record Setup Screen will be the active recording schedule.

See the directions on how to setup a schedule in the Schedule setup section.

MAIN MENU

AUDIO RECORD

The DVR is capable of recording one channel of audio. You can connect a camera that has a built in microphone or connect an external microphone into the RCA audio input to configure the DVR to record with audio.. The cameras that are included with the DVR do not support audio.

To record with audio:

1. Highlight the Audio Record option.
2. Use the mouse wheel or directional keys to change from OFF to ON.
3. Press ENTER or Click the  to save changes.
4. Exit the Main Menu  to save changes. The DVR may take a few moments to save the settings.

Using the Pop Up Menu Bar you can mute the audio from playing through the connected speaker or TV and still record by clicking .

SCHEDULE SETUP

A schedule can be used to customize your recording modes by the hour for every day of the week. This is beneficial for business environments that have different hours during weekdays and the weekend. For home use, you can set different record modes for the days you have people over for housework, yard work, or even baby sitters. By default, the DVR is set to automatically record a 24/7 schedule. You have a choice to customize up to 5 different recording schedules.

The recording schedule is 24/7 and uses a 24 hour clock (e.g. on this screen 18 is 6:00 pm. In live or playback mode 17:00 is equal to 5:00 PM) Each square on the 24/7 schedule represents one hour.



There are 3 different recording options:

1. **Full Record (red)** – will record all the time using the Normal Record PPS.
2. **Alarm Record (orange)** – will record only when a specific action happens (video loss, motion, etc) using the Alarm Record PPS.
3. **No Record (green)** – the DVR will not record during the hour when this option is chosen.

You can now customize a recording schedule to meet your needs and specifications.

There are several advantages of setting up a customized recording schedule. When the DVR is on FULL RECORD 24/7, your hard drive will fill up quickly. To optimize your HDD space, you may wish to choose to record only when motion is detected at certain times, or to not record at all. You can set up your recording schedule based on your own preferences.

There are 5 different options for schedules, so you can set a separate schedule for long weekends, holidays, when you are on vacation, or for the days you will be away from your home/office and have to leave others in charge. Once the schedules are set, it is easy to switch from one to the other.

MAIN MENU

To set the schedules:

1. Highlight SCHEDULE SETUP and select **SET** to enter the schedule record Menu.
2. Select the type of recording you wish to use (Full, Alarm, No) from the bottom of the Menu screen or use the fast forward button to toggle between the type of recording.
3. In the calendar display, press ENTER or click on the hour and day you wish this method of recording to happen.
4. Select the  to save changes and return to the Record Setup Menu.
5. Press Menu or Click the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.



This is a sample schedule. This schedule may work well for a small business, with different settings for weekday business hours, and with more security over the weekend.

Note: To switch between schedules in this mode, scroll the wheel on the mouse, or press the CH1-CH4 button, Quad view buttons.

ALARM SETUP

1. Access the Main Menu by pressing Menu or move the mouse to the bottom of the display screen to reveal pop up Menu bar and click the Menu icon. 
2. Select the ALARM setup icon. 

There are several different types of events that will trigger the Alarm Recording.

1. **External Alarm** – If you have a 2 wire Normally Open (NO), or Normally Closed (NC) device, it can be connected to the DVR to record when the alarm is triggered. For example, the external alarm can also be connected to a motion sensor, or audio sensor.
2. **Video Loss** – The DVR will archive the day and time it detects video loss. This means it will log the time and take whenever a camera is disconnected or tampered with.
3. **Motion Detection** – The DVR will archive and store the footage when motion is detected on any of the 8 cameras when set up.



MAIN MENU

External Alarm Mode

You can adjust your external alarm for Normally Open (NO), or Normally Closed (NC). Please consult the external alarm manufacturer for details regarding whether to set up the External Alarm Mode to Normally Open or Normally Closed.

1. Use the mouse wheel or directional buttons to change from Normally Open (NO), or Normally Closed (NC).
2. Press Menu or select the  to return to the Menu.
3. Press Menu or select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

ALARM DISPLAY MODE

The DVR will allow you set configure your Alarm Display options. This will decide whether or not to change the viewing mode to focus on the camera that is detecting the alarm. There are two choices:

1. **Disable:** No display changes will be made when an alarm is triggered (Motion Detection, External Alarm, Video Loss).
2. **Single Mode:** When active and in Live Viewing Mode, single mode will switch the camera view to a single camera in full screen for 10 seconds. If another alarm is triggered while in Single Camera Mode, the view will switch to the new alarm triggered channel.

Note: DEFENDER does not provide support for external alarm systems. Please contact the alarm manufacturer for instructions.

VIDEO LOSS DETECT

You can set the DVR to archive video footage when it detects video loss. Since video loss is a serious issue for camera surveillance, it is important to be able to see what happened before the video loss occurs. When video loss detection is enabled, the DVR will display on the screen or in the event log when video loss occurs. The DVR must be recording to update the event log. Please see Playback for more information on using the event log. Review the normal recorded footage prior to the video loss occurred.

To Set the DVR to Detect Video Loss:

1. Move the mouse or directional keys to highlight VIDEO LOSS DETECT.
2. Use the mouse wheel or directional keys to change from DISABLE to ENABLE.
3. Press ENTER or select the  to return to the Main Menu.
4. Press Menu or select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

EVENT LOG SETUP

The event log holds the date and time, of the footage which is saved due to an alarm being detected by the DVR and other types of events. The different types of events that are logged are:

1. External Alarm
2. Video Loss
3. Motion Detection
4. Manual Recording
5. Power On

MAIN MENU

The event log setup allows you to choose which alarm triggers will be saved to your event log (maximum 3000 events). Setting up the event log allows you to start playing recorded footage by specific events so that you do not have to fast forward through long periods of footage to see when the alarm is detected. It also serves as a list with the important events that have occurred, so that you can easily trace them, and when they happened.

To Setup the Event Log:

1. Highlight EVENT LOG SETUP.
2. Select  to access the Event Log Setup Menu.
3. Highlight the type of alarm you want to enable or disable.
4. Use the mouse wheel or directional keys to change from ON to OFF.
5. Press Menu or select the  to return to the Menu and save your settings.
6. Press Menu or select the  to exit the Main Menu. The DVR may take a few moments to load the settings.

BUZZER TIME SETUP

The DVR can make an audible beep when a particular alarm is detected. This will alert the user that there is activity detected by the DVR. The DVR can be set to give you this audio alert when there is external alarm activation, motion detection, and/or video loss. Buzzer Time setup will allow you to choose how long after the alarm is detected, you want the beep to occur. The options are OFF and 5 sec – 99 sec. The buzzer for Motion Detection can be set from 5 sec -99sec. To disable the motion detection buzzer, refer to the MOTION SETUP Menu).

To Change the Buzzer Time:

1. Highlight BUZZER TIME SETUP.
2. Select  to access the Buzzer Time Setup Menu.
3. Highlight the type of alarm you want to set.
4. Use the mouse wheel or directional keys to change the length of time the buzzer will sound when the alarm is detected.
5. Press Menu or select the  to return to the Main Menu, or press the ENTER key.
6. Press Menu or select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

RELAY TIME SETUP

The DVR has a connection for an alarm relay output. This allows you to connect a 2 wire Normally Open (NO), or Normally Closed (NC) connection to an external alarm source like a siren, flashing lights, or an existing two wire security system.

Relay time setup allows you to adjust the length of time the DVR will send an electrical signal through the connected relay device. An external power source is likely required. Please contact your alarm manufacturer for information and assistance with your alarm.

Note: DEFENDER does not provide support for external alarm systems. Please contact the alarm manufacturer for instructions.

MAIN MENU

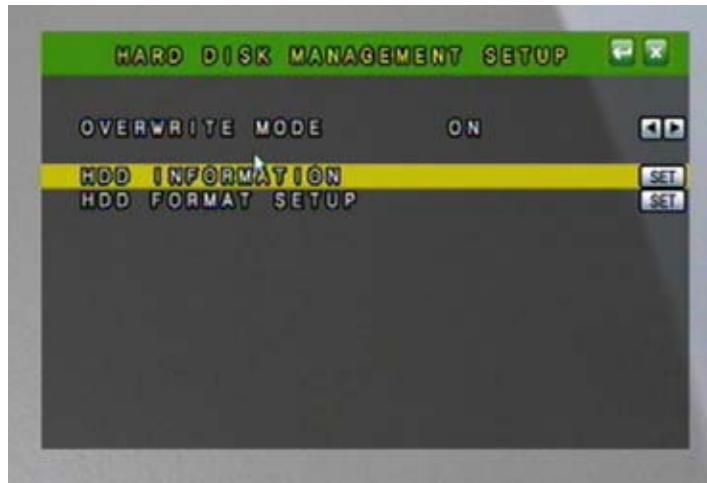
To Setup the Relay Time Setup:

1. Select RELAY TIME SETUP from the Alarm Setup Menu.
2. Select **SET** to access the Relay Time Setup Menu.
3. Highlight the type of alarm you want to set up.
4. Use the mouse wheel or directional keys to change the length of time. The 12V signal will be sent to your external alarm when an alarm is detected.
5. Press Menu or select the  to return to the Main Menu or press the Menu button.
6. Press Menu or select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

HARD DISK MANAGEMENT SETUP

The DVR comes with a pre installed hard drive. The HDD (Hard Disk Drive) Management Menu will allow you to display the space left in the hard drive, clear saved footage and set other HDD related options.

1. Access the Main Menu by pressing Menu or from the Pop Up Menu Bar.
2. Select the Main Menu icon  .
3. In the Main Menu, select HDD Management  .



OVERWRITE MODE

The DVR provides you with the option to automatically overwrite the saved video and audio content on the HDD or to stop recording when the HDD is full. The default setting is ON and will automatically overwrite old footage.

If the mode is set to OFF, you can set a warning to alert you when the HDD is nearing its full capacity. The Capacity Remaining Warning can be set to 5%, 10%, 15%, and 20% remaining. If this option is selected an onscreen message will appear, informing you that your HDD is getting full.

To Set the DVR to Warn You When the HDD is Getting Full:

1. Select OVERWRITE MODE.
2. Use the mouse wheel or directional keys to alternate the overwrite mode between ON and OFF.
3. When you choose OFF a new option will appear allowing you to set a warning level to inform you when the HDD is nearly full.
4. You can choose to set the DVR to warn you that the HDD is getting full when there is :
 - a) 5% HDD capacity remaining
 - b) 10% HDD capacity remaining
 - c) 15% HDD capacity remaining
 - d) 20% HDD capacity remaining

Use the mouse wheel or directional keys to change the capacity warning amount.

5. Press Menu or select the  to return to the Main Menu.
6. Press Menu or select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

MAIN MENU

HDD INFORMATION

This option will allow you to view the total capacity of the connected hard drive as well as the percentage of remaining space. This Menu is only used to display your HDD status, and no settings can be adjusted on this screen.

The HDD Information will Show You:

Disk – Name of HDD

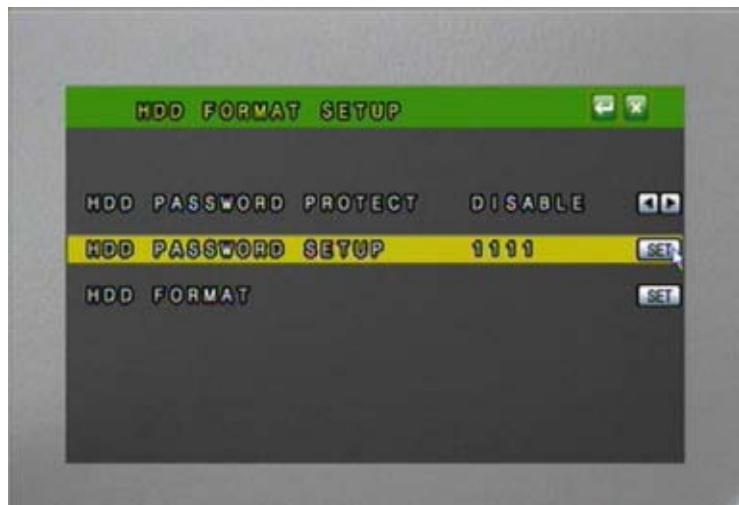
Capacity - The size of your HDD

Left Ratio - The percentage of space left on the HDD

HDD FORMAT SETUP

In this menu you can format the HDD, as well as change security settings for formatting the HDD. A password can be required to format the HDD; even users who have access to all controls of the DVR will not be able to format the hard drive unless they know this password.

Enabling HDD password protection is recommended, so that only the right people can erase any footage you have captured and stored. This password should be different from the password used to access the Menu of the DVR. This setting will prompt a user to enter a password before being able to enter the HDD Format Setup Menu.



To Setup the Password Protect:

1. Select HDD PASSWORD PROTECT.
2. Use the mouse wheel or directional keys to change from DISABLE to ENABLE. This will require the HDD password setup to be entered before accessing the HDD Format Menu while enabled. The next step is to choose a password for the HDD format protection. The default password is the same as the default password for the DVR: 1111. It is recommended that the DVR Menu password and the HDD password be changed and different from the menu password. This way someone can access the DVR Menu, but not the HDD Menu.
3. Select **SET** to enter the HDD password Setup Menu.
4. Highlight the number to change and use the mouse wheel or directional keys on each number to change to the new password.
5. Press Menu or select the to exit the HDD Password Setup.
6. Press Menu or select the to exit the HDD Management Menu.
7. Press Menu or select the to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

MAIN MENU

To Format the HDD:

1. Select HDD FORMAT SETUP.
2. Select **SET** to enter the HDD Format Setup Menu.
3. Use the mouse wheel or directional keys to change from DISABLE to ENABLE.
4. Select **SET** to format your HDD.
5. You will be prompted to ensure that you really want to format the hard drive.
6. Select YES to format the hard drive, or NO to exit the Menu and not delete the stored footage. The selected button will look as if it is pressed in.
7. Press Menu or select the to exit the HDD Management Menu or press the Menu button.
8. Press Menu or select the to exit the Main Menu.

This will not erase any of your DVR settings.

NETWORK SETUP

1. Access the Main Menu by pressing Menu or by using the Pop Up Menu Bar. Move the mouse to the bottom of the display screen to reveal the Pop Up Menu.
2. Select the Menu icon.
3. Select the NETWORK setup icon.

The network setup Menu is your gateway to viewing your footage online. This Menu holds the information you need about your DVR to set up on-line viewing. Note that for basic network setup, the values shown on the screen are the values you will be using, and that you will not need to set new values.

NETWORK SETUP	
IP MODE	DHCP
HTTP PORT	80
IPADDR	192.168.0.114
NETMASK	255.255.255.0
GATEWAY	192.168.0.1
DNS 1	64.161.0.240
DNS 2	168.95.192.1
PPPOE	
DDNS	
RTSP	
MAIL	
FTP	

The Next Page has a quick description of the network setup menu items.

TERMS

IP Mode: Static vs. DHCP

DHCP: (Dynamic Host Configuration Protocol) address is the most common setup for home or office networks. This allows the DVR to automatically receive an IP address from the router. By default the IP MODE should be set to DHCP and this is acceptable in most situations.

static IP: is one that does not change. Static IP addresses are manually assigned by an administrator. Most home or office networks today do not use static IP addresses. If you are unsure of whether you need a static or dynamic IP address, please contact the person who setup your network or your internet service provider (ISP). A static IP address would be beneficial if your internal IP address changes often.

NETWORK SETUP

To Change from Static to DHCP Addresses:

1. Under IP Mode, use the mouse wheel or directional keys to change from DHCP to STATIC.
2. Press Menu or select the  to exit the Network Setup Menu or press the Menu button.
3. Press Menu or select the  to exit the Main Menu and save your settings.

The DVR may take a few moments to load the settings.

NETWORK SETUP	
IP MODE	STATIC
HTTP PORT	80
IP ADDR	192.168.0.114
NETMASK	255.255.255.0
GATEWAY	192.168.0.1
DNS 1	64.161.0.240
DNS 2	168.95.192.1
PPPOE	
DDNS	
RTSP	
MAIL	
FTP	

HTTP Port: Refers to the port that your DVR will use to communicate with your network and the Internet. This port is required to be entered at the end of the IP address to connect to the DVR. (Ex. If using port 2000 and the IP address is 192.168.1.103 you would type <http://192.168.1.103:2000> in the address bar of Internet Explorer) If using port 80 your Internet browser will automatically add it in at the end of the address, even though it may not be visible.

IPADDR: (IP ADDRESS). The numbers here represent the internal IP address of your DVR. If your DVR is not properly connected to the router, the address will appear as 0.0.0.0. To find your DVR's IP address, make sure that it is connected to your router and reset the power on the DVR. The internal IP address is the most important number on the Network Setup Menu screen.

Netmask: (Subnet Mask): The subnet mask is used for identifying the subnetwork the DVR is connected to. There is no need to adjust this number for general network setup. Usually the netmask is 255.255.255.0.

Gateway: (Default Gateway): In computer networking, a default gateway is the device that passes traffic from the local subnet to devices on other subnets. There is no need to adjust this number for general network setup. Generally this is the IP address of your router.

DNS 1: (Domain Name System): For advanced network setup. DNS is used to convert common names into website IP Addresses.

DNS2: For advanced network setup. DNS is used to convert common names into website IP Addresses.

PPPoE SETUP

PPPoE stands for Point-to-Point Protocol over Ethernet. PPPoE is used by (A) DSL Internet connections. Usually the modem or router will store the PPPoE information so that the DVR and other computers that are connected to the network do not require a password to access the Internet. If you use DSL, please contact your ISP for your PPPoE information if required.

To Setup PPPoE Settings:

1. Change PPPoE setting to ENABLE.
2. Enter the Username provided by your ISP.
3. Enter the Password provided by your ISP.
4. Press ENTER on State to update the status.

If properly connected, the State will display your connection status as being connected.

PPPOE SETUP	
PPPOE SETTINGS: DISABLE	
USER NAME:	<input type="text"/>
PASSWORD:	<input type="text"/>
STATE:	idle

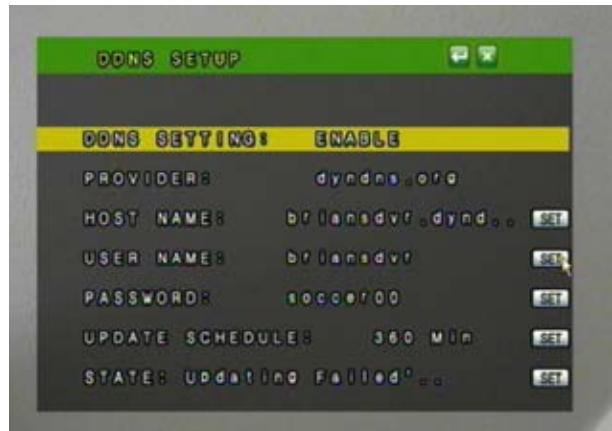
NETWORK SETUP

DDNS: (Dynamic Domain Name Service) This Menu option allows you to set up a common name for the DVR instead of an IP address. This feature is used if you have a Dynamic IP address from your ISP and the IP address is constantly changing.

To Setup your DDNS:

1. Select **SET** to setup the DDNS.
2. Highlight DDNS Setting. Use the mouse wheel or directional keys to change from DISABLE to ENABLE.
3. Highlight PROVIDER. Choose your DDNS provider from the list.
4. Highlight HOST NAME. select **SET** to input your host name.
5. Highlight USER NAME. select **SET** to input your user name.
6. Highlight PASSWORD. select **SET** to input your password.

*See DDNS Setup for more information on the DDNS setting.



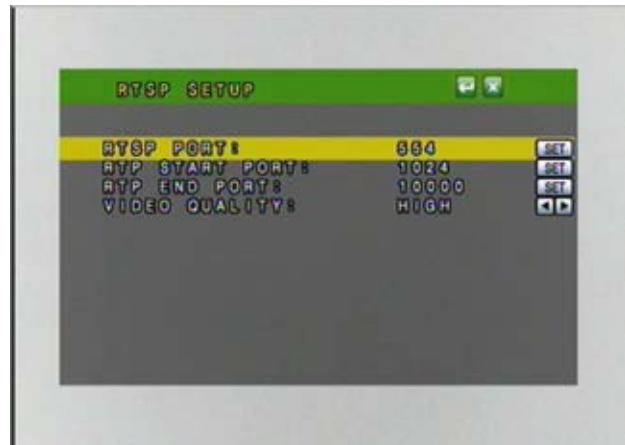
7. Press Menu or select the **←** to exit the DDNS SETUP Menu.
8. Press Menu or select the **×** to save your changes and exit the NETWORK SETUP Menu.

RTSP

RTSP stands for Real Time Streaming Protocol and is used for streaming each channel of video over the Internet.

The following will explain all of the settings that are seen on screen:

RTSP Port: Used by mobile devices to view a single camera.
RTP Start/End Port: Used in conjunction with the RTSP port to view the streaming video footage on the mobile device.
Video Quality: The quality of footage being streamed to mobile device.



Note: You only need to change these settings if your network or ISP is blocking the ports listed on this screen.

MAIL FUNCTION AND SETUP

The mail option makes it so that your DVR sends you an email when there is motion detected and/or the alarm is triggered on the DVR.

To set your DVR to email you when motion and/or the alarm goes off:

1. Click on Menu.
2. Click on the Network setup.
3. Highlight 'MAIL' and select the set button **SET** or press enter on the front of the DVR.

NETWORK SETUP

The virtual keyboard will appear for you to insert the following information:

Motion Setting: Enables the DVR to send you an email when motion is detected by one of the cameras.

Alarm Setting: Enables the DVR to send you an email when an external alarm is triggered by one of the attached devices.

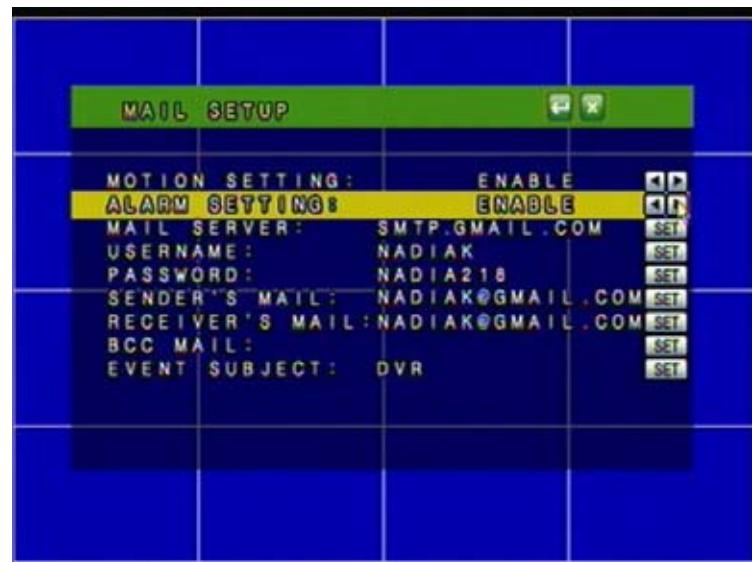
Mail Server: Set your SMTP mail server address. This is going to be provided by your email service provider.

For example:

Google GMAIL: smtp.gmail.com

Yahoo! Email : smtp.mail.yahoo.com

AOL Mail : smtp.aol.com



Username: Put your email username in (example: If your email is NadiaK@gmail.com) your username would be NadiaK.

If when checking your email, your username is the entire email address, then you will enter the entire email address in the username field on the DVR. Your email service provider can provide you with the username to use.

Password: Put your email password in – this is the password you use to access your email account.

Sender's mail: This is the email you that the DVR will use to send you the alert emails. The username and password must have permission to send emails from this email account. Usually this will be the same email address as the username used to log on.

Reciever's mail: This is the email that your DVR will send the alerts to. This can be the same as the sender's email or a different email address.

BCC Mail: You can insert a second email for the DVR to send alerts to. The first receiver will not be aware of the second email address as this is a Blind Carbon Copy (BCC).

This can be the same as the sender's email or a different email address.

Event Subject: This is what the subject of the email will be. Make sure the subject line is clear and can be easily recognized when received in your inbox. Also make sure not to use words that will get filtered by spam checkers.

4. Highlight and enable motion and/or alarm setting by using the scroll wheel on your mouse or the up and down arrow keys on the front panel of the DVR.

- When you enable motion the DVR will email your set email when motion is detected
- When you enable alarm the DVR will email your set email when the alarm is triggered (based on your alarm settings)

Note: Motion detection and/or alarm must be set to ON from the main menu.

NETWORK SETUP

5. After you have entered all the information select the  button to save changes and exit the menu. The DVR may take a few moments to load.

If you receive an email from the DVR it will include:

- The event subject you picked in the subject line of the email
- Warning Message: The date and time that the event took place
- NIC: The IP address of the DVR
- Player: The option to download the player software from the DVR

FTP SETUP

You can enable the DVR to work with an FTP server so that motion or alarm triggered events will be automatically uploaded onto the server. To configure the DVR to upload onto an FTP site you will need to have access to an FTP server (not provided by Defender). Video clips will be uploaded in .264 file format and will require the playback software to view the video clips.

To enable the DVR to send video clips to your FTP server when motion or alarm is detected:

1. Click on Menu. 
2. Click on the Network setup. 
3. Highlight FTP and select the  button.
4. Highlight and enable Motion and/or Alarm settings by using the scroll wheel on your mouse or the up and down arrow keys on the front panel of the DVR.



When you click to set the following items the digital keyboard will pop up for you to insert the following info:

5. **FTP Server:** The host name of your FTP server. This could be a full hostname like ftp.defender.com or in IP address form, 216.12.36.244.
6. **Username:** The username you use to access the FTP server. Most FTP usernames are case sensitive. Use the Shift button to change the case of characters when inputting the username.
7. **Password:** The password you use to access the FTP server. Most FTP passwords are case sensitive. Use the Shift button to change the case of characters when inputting the password.
8. **Port:** The port being used by the FTP server. By default this is port 21 and is the commonly used port for FTP service.
9. **Path:** The path where you want the files to be placed on your FTP server. If you would like to change the file folder that the DVR will upload the files to, enter the desired path name. The DVR will create a folder for each day that files are uploaded in the following format: YYYYMMDD.
10. After you have input all the information select the ENTER  button to save changes and exit the menu.
11. Press the ENTER  button again to save the overall network settings.
12. Click the  to exit the menu. The DVR make take a few moments to load.

Note: Files need to be played back using the playback software. The player can be downloaded from the web interface, the included CD, or from the DVR's product webpage. See Playback Software for information on how to play back up files.

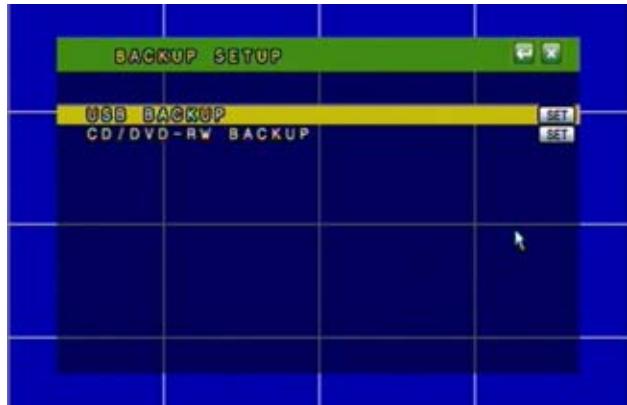
BACKUP SETUP

The DVR allows you to backup your recorded footage onto a separate and portable USB flash drive as well as a CD/DVD.

USB BACKUP

To Setup Backup Recording:

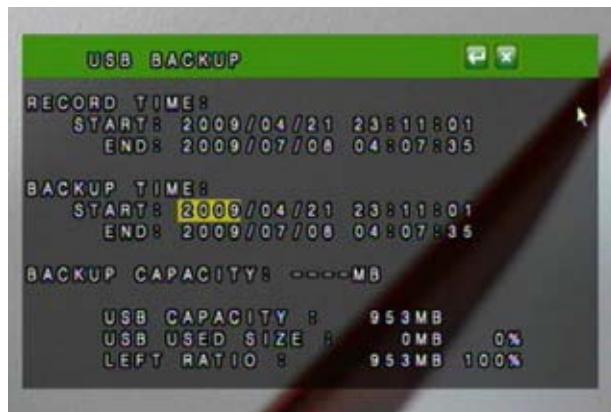
1. Insert your USB flash drive into the USB port on front of the DVR.
2. Access the Main Menu by clicking Menu or move the mouse to the bottom of the screen to reveal the pop up bar.
3. Select the Main Menu icon.
4. In the Main Menu, select Backup set icon.



Record Time:	The start and end time is used to display the initial time and date when recording began and the final date and time when the recording finished (or the latest date and time when backup Menu was accessed).
Backup Time:	The start and end time is used to choose the time frame of the video clip to be backed up onto the USB flash drive.
Backup Capacity:	This displays the size of the desired backup footage time frame. The shorter the video clip the smaller the backup capacity will be in size.
USB Capacity:	Displays the maximum capacity of the USB drive.
USB Used Size:	This displays how much memory on the USB drive is currently in use.
Left Ratio:	This is the amount of memory that is currently available to be used for backup.

To Backup Saved Video Footage:

1. Press ENTER or click **SET** to setup the USB backup recording settings.
From this Menu you can choose the start and end time for the USB backup. This will transfer existing video footage in the backup time frame onto the USB drive.



BACKUP SETUP

2. Choose the starting date and time of when to transfer the video footage. Highlight the value you wish to change and use the directional keys up and down or the mouse scroll wheel to adjust the value.
3. Choose the ending date and time of when to end the transfer of video footage. Highlight the value you wish to change and use the directional keys up and down or the mouse scroll wheel to adjust the value. If the Backup Capacity (in MB) is larger then the LEFT RATIO (In MB) the DVR will not allow you to backup the footage.



The DVR will take a few moments to complete the request since it will put the viewing software as well as video footage onto the USB flash drive. This backup player is required to view the backup footage as the files are exported using H.264 compression. The backup player install file is 1.10MB in size.

4. If you want to check to see how much space is taken up on your USB drive, you can re-enter the USB backup Menu and it will tell you at the bottom of the screen the USB capacity, USB used size and Left Ratio. This is also useful to see if the desired time range will fit onto the USB flash drive.
5. Press Menu or select the to exit the USB Backup Menu.
6. Press Menu or select the to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

DVD/CD BACKUP

The following will explain all of the settings that are seen on screen.

Record Time: The start and end time is used to display the initial time and date when recording began and the final date and time when the recording finished (or the latest date and time when backup menu was accessed).

Backup Time: The start and end time is used to choose the time frame of the video clip to be burned onto a CD or DVD. All fields can be adjusted to best suit your backup time frame.

Backup Capacity: This displays the anticipated size of the backup file to be created.

- If it reads 'OUT OF RANGE' then there was no footage available in your chosen backup time
- If it reads off a number and a maximum number in brackets ex. 246Mb (2Gb Max), it is informing you of the file size you want to burn and how much space you have to burn it

Erase Disk: If the CD/DVD is rewritable, it will erase the disk before backing up the footage on it.

Close Disk: Allows you to choose if the CD/DVD you backup the footage to can have more footage/information added to it in the future. Some CD/DVD readers require that the disc is closed.



BACKUP SETUP

To Backup Saved Video Footage with CD/DVD burner:

1. Power on your external CD/DVD burner according to the manufacturers directions.
2. Plug the external CD/DVD burner into the DVR through the left USB connection on the front of your DVR.
3. Power cycle the DVR by disconnecting and re-connecting the power cable. Allow system to start up and detect all connected devices.
4. Select the main menu icon .
5. In the main menu, select Backup set icon .
6. Insert a blank or rewritable CD/DVD into the external CD/DVD burner.
7. Choose if you would like the disk erased (if it is rewritable) or closed (unable to be written over or have more information put on it) by highlighting the selection and choosing yes or no by using the wheel on the mouse to scroll through or the up and down arrows on the DVR front panel.
8. Make sure that the Backup does not read 'OUT OF RANGE'.
9. When all the settings are to your liking press the  button to save changes and burn the footage from the DVR onto the CD/DVD inserted into the external burner.



Note: You will need an external USB CD/DVD burner. You cannot use your computers CD/DVD burner.

SYSTEM SETUP

The system setup Menu allows you to set up the parameters of your DVR. It holds the date/time setup, factory default settings, system password, and many other options. The following list describes what each option does and how to configure it.

1. Access the Main Menu by pressing Menu or move you mouse to the bottom of the display screen to reveal pop up Menu bar.
2. Select the Menu icon .
3. Select the System setup icon .

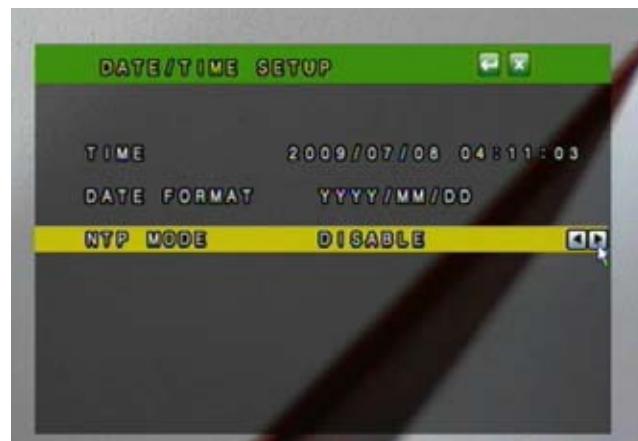


DATE/TIME SETUP

Allows you to set up date and time on your DVR so that your recording schedule will be accurate.

To Setup the Date and Time:

1. Select DATE/TIME SETUP from the System Setup Menu. Select  to setup the date and time.
2. Highlight the area you wish to change.
3. Date Format allows you to choose the syntax to display the Year, Month and Date. This can be changed between YYYY/MM/DD, DD/MM/YYYY, and MM/DD/YYYY depending on what you are most comfortable with.



SYSTEM SETUP

4. NTP (Network Time Protocol) Mode can be enabled or disabled to allow the DVR to synchronize the date and time with a NTP server. By default the NTP server IP is set to 198.123.30.132.
5. Choose your GMT Time zone. Example: Central Time Zone = -06:00 GMT.
6. Update Time will be how often the DVR checks with the NTP server to update the system time with the current NTP server time. It can be set from every 1 hour up to every 24 hours.
7. Press Menu or select the  to exit the Date/Time Setup Menu.
8. Press Menu or select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

System Type

The two system types that are available on this DVR are PAL and NTSC. The North American standard is NTSC and should only be set to PAL if the TV or monitor that the DVR is connected to uses only PAL format.

To set the system type:

1. Highlight SYSTEM TYPE from the System Setup Menu. Use the mouse wheel or directional keys to change from NTSC to PAL.
2. Select the  to exit the SYSTEM TYPE menu.
3. Select the  to exit the Main Menu and save your settings. The DVR may take a few moments to load the settings.

Keyboard Lock

The keyboard lock option will prevent people from using the buttons on the front of your DVR without a password. This does not lock out the Menu. Enable system password to protect the Menu from unauthorized change. There are two different Keyboard Lock options:

Type 1 – Allows a user to change monitor views, but requires a password to search and control playback.

Type 2 – Prevents unauthorized user from performing any action without a password. (System password prevents a user from accessing the Menu).

To set the keyboard lock:

1. Highlight KEYBOARD LOCK.
2. Use the mouse wheel or directional keys to choose between Type 1, Type 2 or OFF.
3. Select the  to save and or press ENTER.
4. Exit the Main Menu  to save these settings. It may take a few moments to save the changes.

DVR ID Number

Used to identify this DVR if using multiple DVRs. The ID value can be set from 0 – 31.

DISPLAY SETUP

Allows you to configure the on screen display of the DVR to show camera titles, the DVR's status, and the date and time in live display mode.

To set the display parameters:

1. Highlight DISPLAY SETUP from the System Setup Menu.
2. Select **SET** to setup the date and time.
3. Use the mouse wheel or directional keys to enable CAMERA TITLE, DVR STATUS and DATE/TIME. By enabling these options, the camera title, the status of the DVR and the date/time will appear on the viewing screen.
4. Select the  to save.
5. Exit the Main Menu.  It may take a few moments to save the changes.

SYSTEM SETUP

LANGUAGE

This DVR allows for the following 13 languages:

English, Chinese, Italian, French, Japanese, Spanish, Polish, simplified Chinese, Greek, Hungarian, Dutch, Russian and Czech

To change the on screen display language:

1. Highlight LANGUAGE.
2. Use the mouse scroll wheel or directional keys to change to your desired language.
3. Press Menu or select the  to save and exit.
4. Press Menu or click  to exit the Main Menu and save these settings. It may take a few moments to save the changes.



SYSTEM PASSWORD SETUP

The system password is used to authenticate users before being able to access all of the features of the DVR. By default the DVR Password Mode is set to DISABLED. If set to ENABLED the user will be prompted to enter a password before accessing the Menu or control the DVR in certain Keyboard Lock modes. It is recommended that you change the DVR from the default password.

To change the system password settings:

1. Highlight SYSTEM PASSWORD from the System Setup Menu.
2. Select  to configure your password settings.
3. Use the mouse wheel or directional keys to alternate between "DISABLE" and "ENABLE".
4. Highlight PASSWORD. Select  to choose a new password. Note passwords can only be 4 numeric characters.
5. Highlight the value to change and use the mouse scroll wheel or directional keys to navigate through the numbers.
6. Press Menu or select  to save settings and return to the System Setup menu.
7. Press Menu or select  to save settings and return to Main Menu.

FIRMWARE UPGRADE

The DVR checks for a connected USB device for a firmware update. **Warning: Attempting to update the firmware with an invalid file could potentially render the DVR inoperable.** Only complete the firmware upgrade if directed by a DEFENDER technical support representative.

LOAD DEFAULT

The load default Menu allows you to restore your DVR back to the factory settings, backup current settings to a USB drive, and Load settings that are saved on the USB drive.

To restore DVR to factory default settings:

1. Select LOAD DEFAULT from the System Setup Menu.
2. Select  to enter the load default settings page.
3. Select "Load Setup From Default" and press ENTER or click .

A warning screen will appear saying: "SYSTEM SETUP WILL INITIALIZE. CONTINUE? YES/NO."

SYSTEM SETUP

4. Use the directional keys or the mouse to select either YES or NO. Select YES to load the factory default settings.
5. Click  to save settings and return to System Set.
6. Click  to save settings and return to Main Menu.

Load Setup From USB

This option can only be used if the DVR settings have been previously backed up to USB. The DVR settings will be saved on the USB drive as DVR.cfg.



Backup Setup to USB

This will save the current DVR settings to a USB flash drive. This will not backup any video footage to the USB drive. Use this function to save your current settings and reload them at a later date or for setting up multiple DVRs.

DAYLIGHT SAVING TIME SETUP

This setting will allow you to set up the daylight saving times for your region.

This will be beneficial so the DVR will always display the proper time even during the daylight savings months.

Daylight Savings Mode can be set to Off, Manual or Auto.

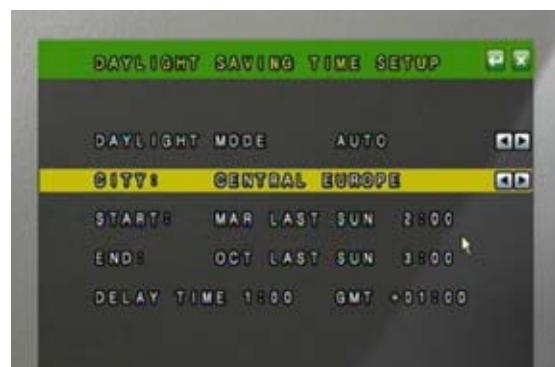
Off: The DVR will not compensate for daylight savings time. No changes will be made to the time automatically.

Auto: Use the default daylight savings days stored on the DVR. Make sure the date and time are set to the proper daylight savings days.

Manual: Manually set the start and end date and time for daylight savings in your area. The delay time will be the time difference during the daylight savings month. Ex. If the time changes 1 hour behind then the delay will be set to 1 hour.

Auto Mode:

1. Set the Daylight Mode to AUTO.
2. Choose the City or Time Zone that most accurately reflects your daylight savings dates and times.
3. Press Menu or click the return button to save your settings.



Manual Mode:

1. Set the Daylight Mode to MANUAL.
2. Highlight the Start Date and press ENTER or click the **SET** button.
3. Highlight the desired field to adjust and use the directional keys or the mouse scroll wheel to adjust to the proper value.
4. Press Menu or click on the Return button to save and return to the previous Menu.
5. Repeat steps 2-4 for the End Date.
6. Set the Delay time to accurately reflect the time change during the daylight savings months.

Press Menu or click the Return button to save your settings and return to the previous Menu.

LIVE VIEWING

POP UP MENU BAR (operation) – Using the USB Mouse, the pop up menu bar allows you to view the following options.



PTZ control – Please refer to the PTZ control section.

HDD & USB INFORMATION

You can quickly access your HDD & USB information right from the Pop Up Menu on the live viewing screen. This will let you easily determine how much space is left on your HDD and your USB drive.

Disk: The name of the connected hard drive.

Capacity: The maximum capacity of the hard drive. This should be approximately 500GB.

Left Ratio: Displays a percentage of the remaining hard drive memory.

USB Install: Displays whether the USB drive is properly connected and installed.

USB Capacity: Displays the maximum capacity of the USB drive.

USB Used Size: Displays how much memory of the USB drive is currently in use.

USB Left Ratio: Displays the remaining memory of the USB drive as well as a percentage of the free space remaining.

To Call up the HDD & USB Information:

1. Select the icon to call up the HDD & USB information page.
2. The page will reveal the capacity of your HDD and the percent of space left to record. It will also display any information regarding a connected USB flash drive.
3. Click or press Menu to exit the HDD & USB information Menu.

DIGITAL ZOOM

You can digitally zoom into a live image to reveal a close up of the area you chose. You must be in the full screen single-camera mode to access the zoom options.

Please note that this is only digital zoom and will only enlarge the image, not focus in on a space.

To zoom in:

1. Select the icon to access the zoom controls. A message box will appear on screen that says Zoom On.
2. Click and hold the left mouse button down while you move the mouse so yellow tinted box will appear around the area you wish to zoom in on.
3. Left click to zoom back out, but stay in digital zoom mode.
4. To exit the digital zoom, click the right mouse button. A message box will appear on screen that says Zoom Off.

AUDIO

This setting will enable volume or disable the volume (mute).

To Turn Audio Off or On:

1. Left click the Audio Control icon to toggle between audio on or audio off.

Note: The SN501-16CH does not include audio supported cameras, but it does support one audio input. If you have attached a microphone, or have a camera that supports audio, you can choose to turn the sound on and off by clicking this button.

PLAYBACK

By clicking the Play button from the Pop Up Menu, front panel, or remote control a Play Search window will pop up. The SN501-16CH allows you to review your playback with two different search options:

1. **Play Time Search** – Allows you to view your recorded footage based on the day and time you wish to preview. This option works best when you know the approximate time/day that you want to view footage from.
2. **Event List Search** – Calls up an event list with many different types of events. Some event types are Power On, Video Loss, Alarm and Motion. This option works best to review the events on the DVR and select events that were unexpected or peak your interest.

Press STOP to exit out of the playback or playback menu.



PLAYBACK CONTROLS

To enter the playback Menu, click the playback button on the Pop-Up Menu at the bottom of the screen.

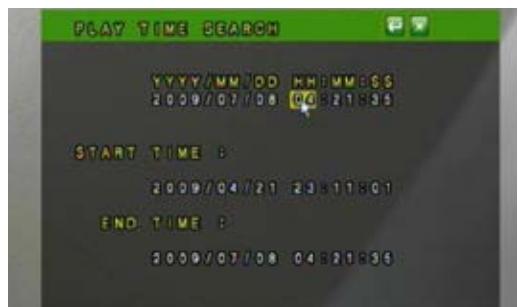
The controls are as follows, from left to right:

1. **HDD & USB INFORMATION** – Calls up your HDD and USB drive information
2. **COPY** – Pressing this icon will back up the selected recorded footage to a USB drive. It will record until the copy button is pressed a second time. USB drive must be connected to work.
3. **AUDIO CONTROL** – Pressing this icon will turn the audio on or off (mute)
4. **VIEWING MODE** – Switch between single camera (1-4) and quad screen
5. **FAST REVERSE PLAYBACK** – Rewinds footage, x2, x4, x8
6. **REVERSE PLAYBACK** – Plays back your footage in reverse
7. **STEP BACK** – Pauses the footage, and steps back
8. **STOP** – Stops playback and returns to Play Search Menu
9. **STEP FORWARD** – Pauses the footage, and moves playback a few frames each time it is pressed
10. **PLAY** – Resumes normal playback speed
11. **FAST FORWARD** – Fast forwards footage x2, x4, x8

PLAYBACK

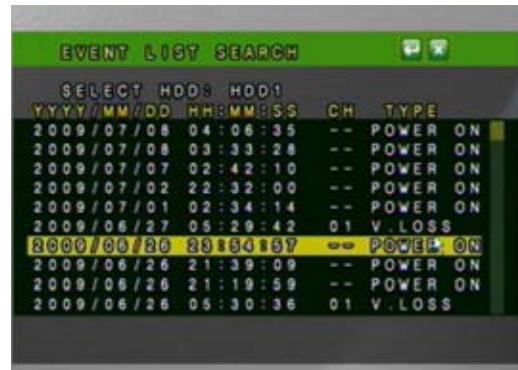
SEARCH BY TIME

1. Select the play button to call up the playback Menu  or press PLAY on the front of the DVR or the remote.
2. Highlight PLAY TIME SEARCH and select using the mouse or by pressing enter on the DVR or remote.
3. Use the mouse wheel or directional keys to choose the date and time you wish to view.
4. The total time you have been recording for is listed at the bottom of the play time search. START TIME is when your DVR began recording and END TIME is the last time your DVR was recording.
5. After you have chosen the date and time you want to view, select the  to view the footage or press enter on DVR or remote control.
6. Please see above for playback controls.
7. To exit playback, press the stop button, either on the DVR or remote control, or from the bottom Pop Up Menu if using the mouse.



EVENT LIST SEARCH

1. Select the play button to call up the playback Menu  or press PLAY on the front of the DVR or remote control.
2. Highlight EVENT LIST SEARCH.
3. Press ENTER or double click the left mouse button to enter the Event Search menu or press the enter button on the DVR or remote control.
4. Navigate through the event list by using the up and down directional buttons or the mouse scroll wheel.
5. Highlight the event you want to view and press enter or double click the left mouse button to view the video footage from the event.
6. Follow the playback controls listed earlier to view your footage.
7. To exit playback, press STOP or scroll mouse to bottom of screen and click the stop button.



The Events are as follows:

POWER	If the DVR experiences power loss, it will record the date and time of the rebooting.
RECORD	When the recording starts, the DVR will record the date, time and corresponding channel, as well as the  icon will appear on the channel.
V. LOSS	When the signal from a camera is lost, the DVR will record the date, time and corresponding channel, as well as the  icon will appear on the channel. This could be caused by a bad connection or tampering with the camera.
ALARM	When an external alarm is triggered, the DVR will record the date, time and corresponding channel. The DVR will also display the  icon on the channel which received the alarm until a button is pressed.
MOTION	When the DVR detects motion, it will record the date, time, and corresponding channel. The DVR will also display the  icon on the channel where motion was detected.

PLAYBACK

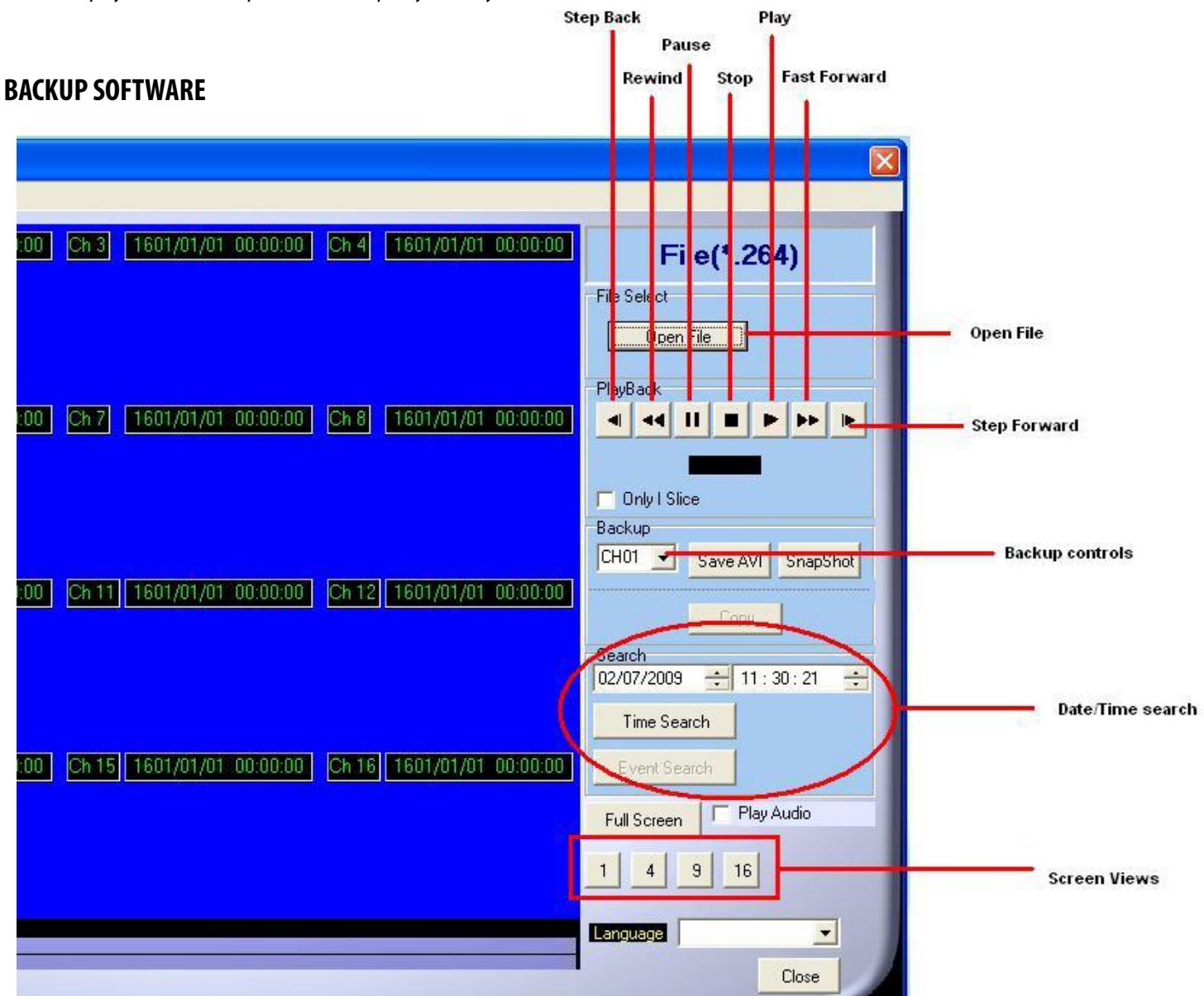
BACKUP VIDEO PLAYBACK

Once you have backup footage on your USB drive, you can archive that footage or view it on a computer.

How to View Backup Footage from USB:

1. Insert your USB drive into your Windows based PC or laptop.
2. Install the viewer application by opening R6VIEWER.EXE.
3. Use overlay mode when prompted.
4. Click "Open" under File Select.
5. Navigate the USB drive and select the *.264 file you wish to view. If you choose to rename the video clip make sure not to change the file extension from .264.
6. Click "Open" on the file you wish to play.

Follow the playback controls explained in Backup Player – Playback Control.



PLAYBACK

To begin viewing playback click the play button.

BACKUP PLAYER – PLAYBACK CONTROL

The playback buttons are as follows from left to right:

 STEP BACK:	Pauses playback and reverses playback one frame each time it is clicked
 REWIND:	Rewinds playback
 PAUSE:	Pauses playback
 STOP:	Stops playback
 PLAY:	Begins playback
 FAST FORWARD:	Fast forwards playback
 STEP FORWARD:	Pauses playback and advances footage one frame each time it is clicked.

The backup buttons are as follows:

Channel Selected: Choose which camera you want to backup

Save AVI: Saves selected camera footage as a video

SnapShot: Saves selected camera footage as a still image

To backup your file to AVI:

1. Search for and find the video footage to backup to your computer.
2. Choose the specific channel to backup (If in multi-camera mode) If in single camera mode the backup channel will be chosen automatically.
3. During playback mode, click the AVI button to start .
4. Make a filename and path then click the start button to start AVI backup.
5. Click the Stop AVI button to finish backup.

Searching for footage:

To search by time:

1. Enter the time and date of the footage you wish to review.
2. Click Time Search to playback all the footage during the time you selected.

SCREEN DISPLAY OPTIONS



Full Screen – Opens current viewing screen to full screen mode. To exit, right click the mouse. (**Note: There are no playback controls on full screen**)

1 – Single Camera mode will display only one channel.

4 – Quad Camera mode displays 4 channels.

9 – 9 channel mode displays 9 channels.

16 – 16 channel mode displays 16 channels.

Play Audio – Will play audio through computer if it was recorded onto the backup footage.

NETWORK GUIDE

REQUIREMENTS

You will need to have:

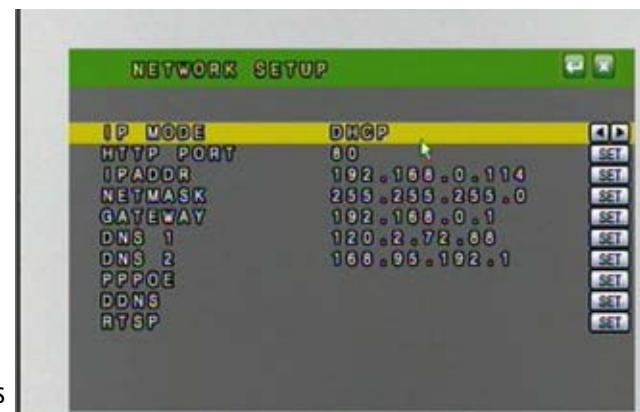
- The DVR connected to a router
- The router connected to the Internet
- A PC or laptop that is connected to the same router that the DVR is connected to. The PC can be connected by a wired or wireless connection
- Internet Explorer 6.0 or greater (to check the version of Internet explorer open I.E. In the top Menu bar select "Help" and then select About Internet Explorer. The version of I.E. will be displayed.)
- A genuine and fully updated version of Windows XP or Vista

Note: The computer and DVR need to be connected to the same router for initial setup. A computer will not always be necessary at the location to view the DVR.

Finding your DVR's IP Address

By default, the DVR IP mode is set to DHCP. This means the DVR will automatically retrieve an IP address from the router that it is connected to. Unless your network requires a static IP address leave the DVR IP mode set as DHCP.

1. Press Menu.
2. Enter password if prompted. The default password is "1111".
3. Select NETWORK SETUP.
4. Make sure the "IP Mode" is set to DHCP. This setting is acceptable for most users.
5. Write down your IP address, Subnet Mask, Default Gateway, and DNS. This information will be used in the next few steps to view the DVR on your computer as well viewing the DVR over the Internet.



If your router does not support DHCP, contact your network administrator to supply you with the proper IP information. If the DVR needs to store PPPoE (DSL/ADSL) settings contact your ISP (Internet Service Provider) for the proper IP address settings.

Preparing Your Computer for Viewing the DVR:

Every computer that is accessing the DVR will need to be configured to download and run ActiveX controls. This change only needs to be made one time on the computer that is accessing the DVR. This can be done by following either of the two methods below.

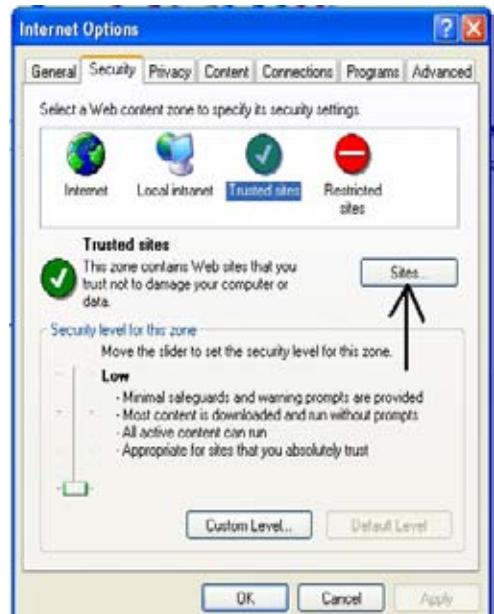
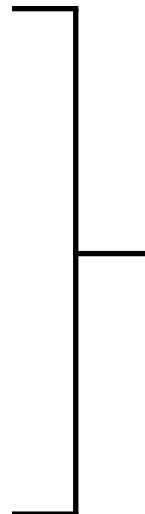
Method 1 only affects websites that you specifically add to the trusted sites list. To change for all websites, use Method 2.

NETWORK GUIDE

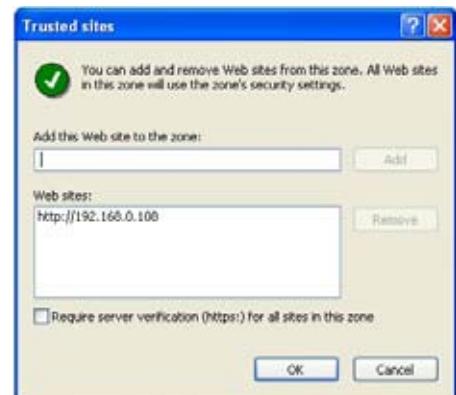
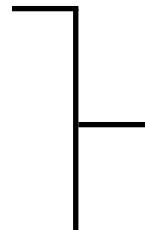
Method 1 (Recommended):

Add the DVR's IP address to the Trusted Sites in Internet Explorer.

1. Open up Internet Explorer.
2. Click on TOOLS.
3. Click on INTERNET OPTIONS.
4. Click on the SECURITY Tab.
5. Click on TRUSTED SITES.
6. Click on the SITES button.

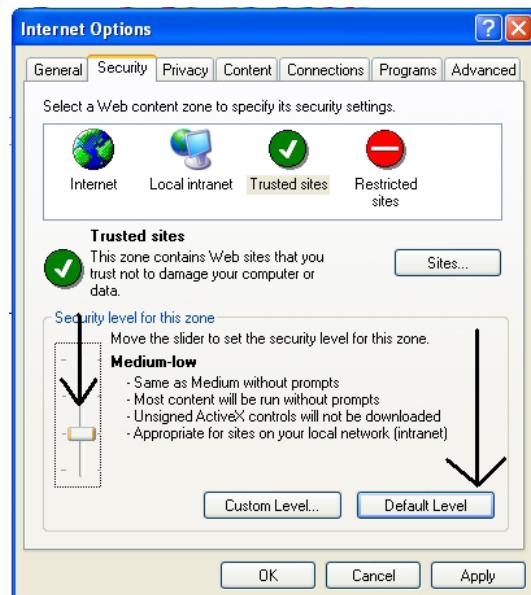
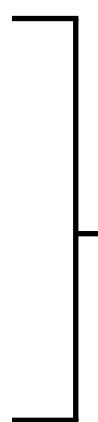


7. Type in the IP address of the DVR in the following format: `http://192.168.0.108` and click ADD.
8. If 'Require server verification (https:) for all sites ...' is selected you will need to uncheck the selection box.



The IP address used in the example above is for internal network viewing. If you are trying to access the DVR from a remote location you will add the "External IP Address" to the trusted sites list. See Finding your External IP Address.

9. Change the default settings for the TRUSTED SITES zone to low. Click on DEFAULT LEVEL and change the security level of the zone to "Low". This can be done by running the slider to the bottom. This will allow ActiveX controls from the DVR to be downloaded and the DVR to be viewed on the computer.
10. Click Apply.
11. Click OK.



NETWORK GUIDE

Method 2:

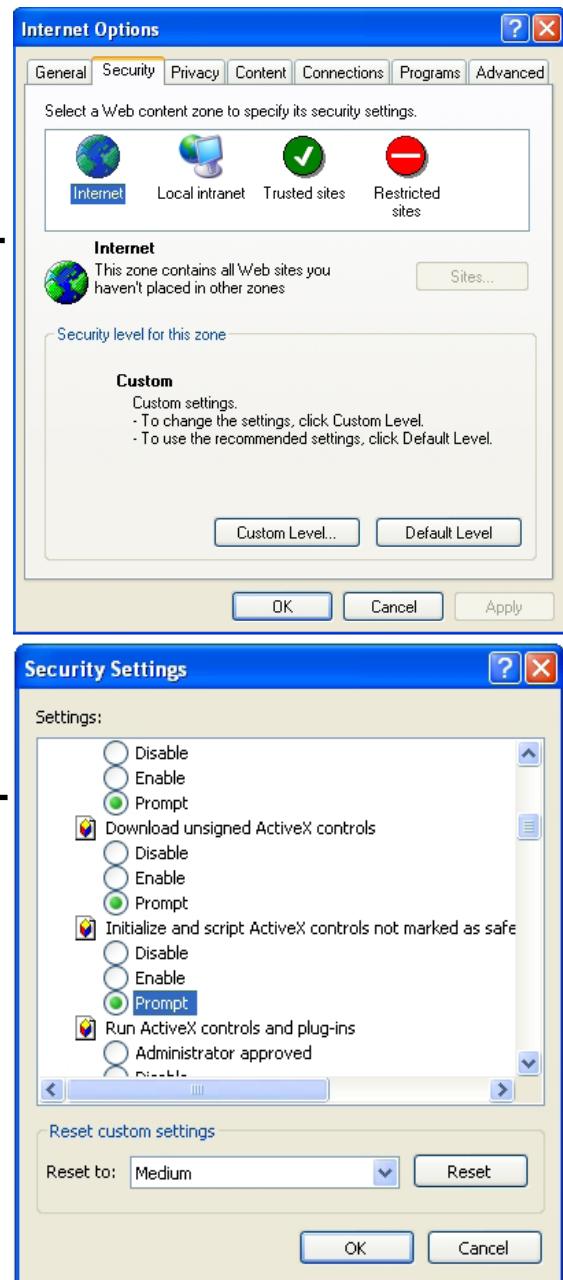
1. Open up Internet Explorer.
2. Click on TOOLS.
3. Click on INTERNET OPTIONS.
4. Click on the SECURITY Tab then the CUSTOM LEVEL button.
5. Change the ActiveX settings listed below.
 - Download signed ActiveX controls: PROMPT or ENABLED
 - Download unsigned ActiveX controls: PROMPT
 - Initialize and script ActiveX controls not marked as safe: PROMPT
 - Run ActiveX controls and plug-ins: ENABLE
 - Script ActiveX controls marked as safe for scripting: ENABLE

If this is an option:

- Allow automatic prompting for file and code downloads: ENABLE

6. Press OK.
7. Press APPLY.
8. Close out of the Options window.

Note: *This method needs to be done on every computer you wish to view your DVR from.*



Viewing Your DVR on Your Computer

Now that the computer is prepared to install the necessary ActiveX changes listed above you are ready to start viewing the DVR using your computer. Using Internet Explorer, type the IP address of the DVR into the address bar using the following format: <http://192.168.0.108> and press ENTER.



If the computer and the DVR are connected to the same router you can use the internal IP address to view the DVR. If the computer is not connected to the same router and is at a remote location you will need to use the external IP address for the DVR to view the DVR from that computer.

NETWORK GUIDE

Log in to the DVR (Using Internet Explorer):

By default the DVR will require a user to input a username and password before being able to view the DVR online. The default username and password for the web interface of the DVR is:

Username: admin

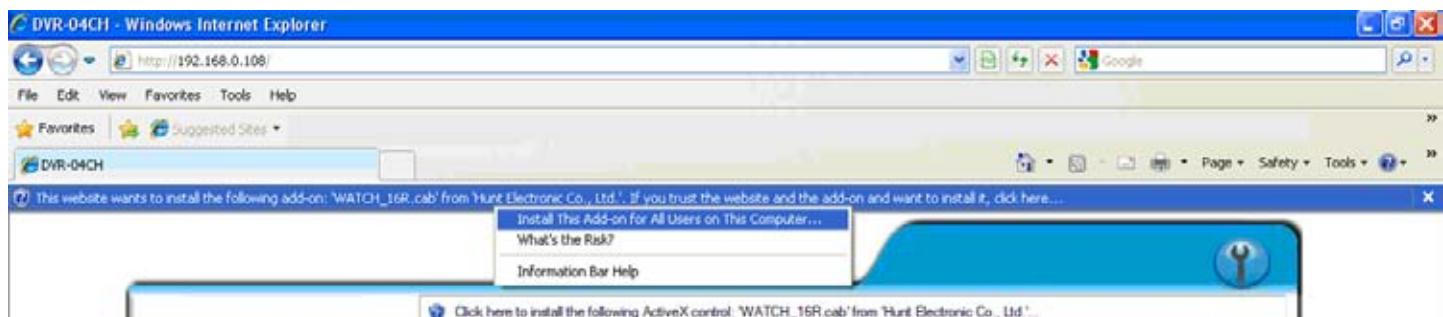
Password: admin

To add a new user or enable Anonymous Login see User Management.



Installing the ActiveX controls:

There will be a yellow information bar that pops up below the address bar in Internet Explorer. Click on the yellow information bar and then select "Install This Add-on for All Users on This Computer...". Please be patient as the installation process can take 1-2 minutes.



If your ActiveX settings are set correctly you will see the following dialogue box.



Click Install.

You should now see the web player and the connected cameras.

NETWORK GUIDE

VIEWING YOUR DVR OUTSIDE OF YOUR NETWORK

Now that you have successfully viewed your DVR and cameras from a computer it is time to set up your router to view the DVR while at a remote location. This process is called Port Forwarding and you can find detailed instructions on how to complete the required steps at <http://www.portforward.com>.

***Port forwarding is required if you want to view the DVR from a computer that is not connected to the same router.**

Configuring your Router to view the DVR Externally (Port Forwarding):

Port forwarding is a necessary step that opens a path on your home/business network to allow you to view your DVR video feed from outside your network (over the Internet).

There are hundreds of brands of routers on the market, you can find step by step instructions on <http://www.portforward.com>.

Easy to follow Networking Video Guides are available under the support section of the company website (<http://www.defender-usa.com>).

Once on <http://www.portforward.com>:

- Select your router make and model from the list of DVRs
- Skip any advertisements that may be seen by clicking "Click here to skip this advertisement..." in the top right hand corner
- You will see a list of various applications. Find a link for any DVR or IP camera and click on it. If you cannot find a DVR or Camera link, you can pick any application, the instructions are all very similar
- Follow the instructions using the HTTP port number assigned to the DVR
- By default the http port is 80 and can be verified by checking the NETWORK SETUP section in the Menu of the DVR

Once the port forwarding is complete you are ready to view your DVR from a remote location:

- If you are going to be viewing your cameras on your mobile device you will also need to port forward the RTSP port and RTP port range. These ports are listed on the RTSP SETUP section of the DVR. By default port 554 and a port range of 1024-10000 need to be forwarded to the Internal IP address of the DVR. **See "3G MOBILE DEVICE SETUP" of the manual for more information**

These instructions have been created without a stand alone firewall in place. If you have a firewall, please consult a computer systems technician to configure the firewall to allow the required ports to pass through it.

Note: Your router may require a user name and password. If you do not know the username or password, contact the person who setup your router. <http://www.portforward.com> will provide you with the router's default user name and password.

FINDING YOUR EXTERNAL IP

The external IP address of the DVR is used to access the DVR from any remote location with Internet access. To find the external IP address of the DVR go to www.whatismyip.org or www.showmyip.com using a computer that is connected to the same router as the DVR. The web sites will display your external IP address in the top of the web page for your reference.



NETWORK GUIDE

TESTING

Now that you know your external IP address, you can perform a test to ensure your DVR is accessible from outside your network (over the internet). This test should be performed by a computer that is not on the same network as the DVR. Although, using the external IP on the same network will sometimes work, it will not work in all cases and it is best to test from a remote location.

1. Open Internet Explorer, and in the address bar type in the external IP address you acquired from <http://whatsmyip.org>. It should be similar to the following: <http://74.11.213.177>. If using a port other then the default port 80 it will need to be entered at the end of the IP address. Ex. <http://74.11.213.177:2000>.
2. Press ENTER.

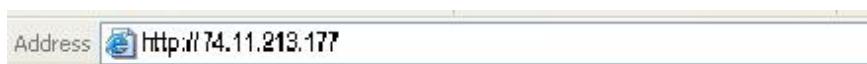
ONCE SUCCESSFUL

- You will be prompted to enter your username/password and install the ActiveX controls
- You are now able to view the DVR from anywhere in the world with Internet access and proper computer settings

IF YOU CANNOT CONNECT

If the Remote Viewing does NOT connect it could be caused by one of the following reasons:

- Make sure the browser is Internet Explorer 6.0 or later and is on a Windows PC
- Check all your network connections and go through the above steps again to make sure a configuration error was not made. You may have to configure PPPoE settings to match the settings provided to you by your Internet Service Provider (ISP). Consult your ISP for more information on your PPPoE settings
- Port forwarding is not set up correctly. Review the section "CONFIGURING YOUR ROUTER (PORT FORWARDING)" and www.portforward.com for setup instructions
- A pop-up blocker is preventing the ActiveX controls from prompting you to install
- Your router is blocking your computer from using the external IP address from the same network as the DVR. Try connecting to the External IP Address from a remote computer that is not connected to the same network
- Port 80 is being blocked by your ISP (Internet Service Provider). Try changing the HTTP port to 2000. Port forwarding will need to be setup for the new port
- A DSL modem is preventing the connection because it is on a different sub-network. Contact your ISP to assist with bridging the modem and router together



The page cannot be displayed

The page you are looking for is currently unavailable. The Web site might be experiencing technical difficulties, or you may need to adjust your browser settings.

Note: DEFENDER technical support cannot troubleshoot modems, since changing these settings can potentially render your modem inoperable. Bridging or any other modifications to the modem will need to be completed by the ISP.

NETWORK GUIDE

To Configure the DVR to Work with DDNS:

1. Press Menu and select NETWORK SETUP. Insert password if required. The default password is "1111".
2. Navigate to DDNS and press ENTER.
3. Change DDNS SETTING to ENABLE.

DDNS (Dynamic DNS)

Instead of having to type in the IP address to access the DVR online you can use DDNS to create an easy to remember website name to access the DVR. The DVR has many DDNS Provider web addresses built into it. The following instructions are for DYNDNS.org and DDNS.CAMDDNS.COM. The sites are not owned nor operated by DEFENDER and therefore support for these services will be done through their website.

DDNS.CAMDDNS.COM

1. Set the provider to ddns.camddns.com.
2. Enter the username of the account you would like to create.
3. Update Schedule defines how often the DVR will connect to the DDNS web site and update the website with the most current external IP information.
4. Navigate to STATE: and click SET or press ENTER to manually update the website. You will see the DDNS website name next to the STATE. To access the DVR using the DDNS account type in the DDNS website name in an Internet Explorer browser. The syntax should be similar to <http://username.ddns.camddns.com>. If updating fails, the DDNS name is already registered or the DVR may not be properly connected to the Internet. Try updating again in about one minute or changing the username.

DYNDNS.ORG (requires a DYNDNS.ORG account)

The rest of the information for the setup screen will be acquired from the DDNS account you have set up online.

1. On your DVR set the provider to dyndns.org.
2. Enter the hostname of your DDNS account. (ex. NadiasDVR.dyndns.org).
3. Enter the username of the DYNDNS account you created.
4. Enter the password of the DYNDNS account you created.
5. UPDATE SCHEDULE defines how often the DVR will connect to the DDNS web site and update the website with the most current external IP information.
6. Navigate to STATE: and click SET or press ENTER to manually update the website.



Note: Before filling in the DYNDNS.com information on your DVR, you must create an account and a hostname for your DVR through the DYNDNS website.

NETWORK GUIDE

DYNDNS.ORG ACCOUNT SETUP

(required if using DYNDNS.ORG)

1. Open Internet Explorer and type <http://www.dyndns.org> in the address bar.
2. Create a new account by clicking the “Create Account” link in the top right hand corner of the site.
3. Enter your preferred user name, email address, and password.
4. Optional information can be left blank, unless you would like to enter it.
5. Read and agree to the Acceptable Use Policy (AUP) by checking the box and click “Create Account”.
6. An account verification email will be sent to the email address you supplied. You need to follow instructions in order to complete the account activation.

Once the account has been confirmed you can log into the account and setup for use with the DVR.

7. Enter the DYNDNS.org username and password you created and click login.
8. Click on the “Services” button located on the top Menu bar.
9. Click on the Dynamic DNS link.
10. Click on the “Get Started” link located on right side of the screen.
11. Type in a desired host name. We recommend you use your name, company name, or something that is easy for you to remember.
12. Choose a domain name from the drop down Menu. We recommend using dyndns.org.
13. In the IP address field, type in the external IP address of the DVR. This will only need to be done for the initial set up as the DVR will connect and update with its current IP address according to the UPDATE SCHEDULE on the DVR.
14. Leave all of the other options as is, and click “Create New Host”.
15. Follow on screen instructions to activate and “Check out” your free DDNS hostname.
16. Your dynamic DNS settings have been created.



TO VIEW DVR THROUGH HOSTNAME

1. Open up your Internet browser and type in your DVR’s hostname that you created on your NDNS account.
2. You will be prompted for a Username and Password.

Username: admin

Password: admin

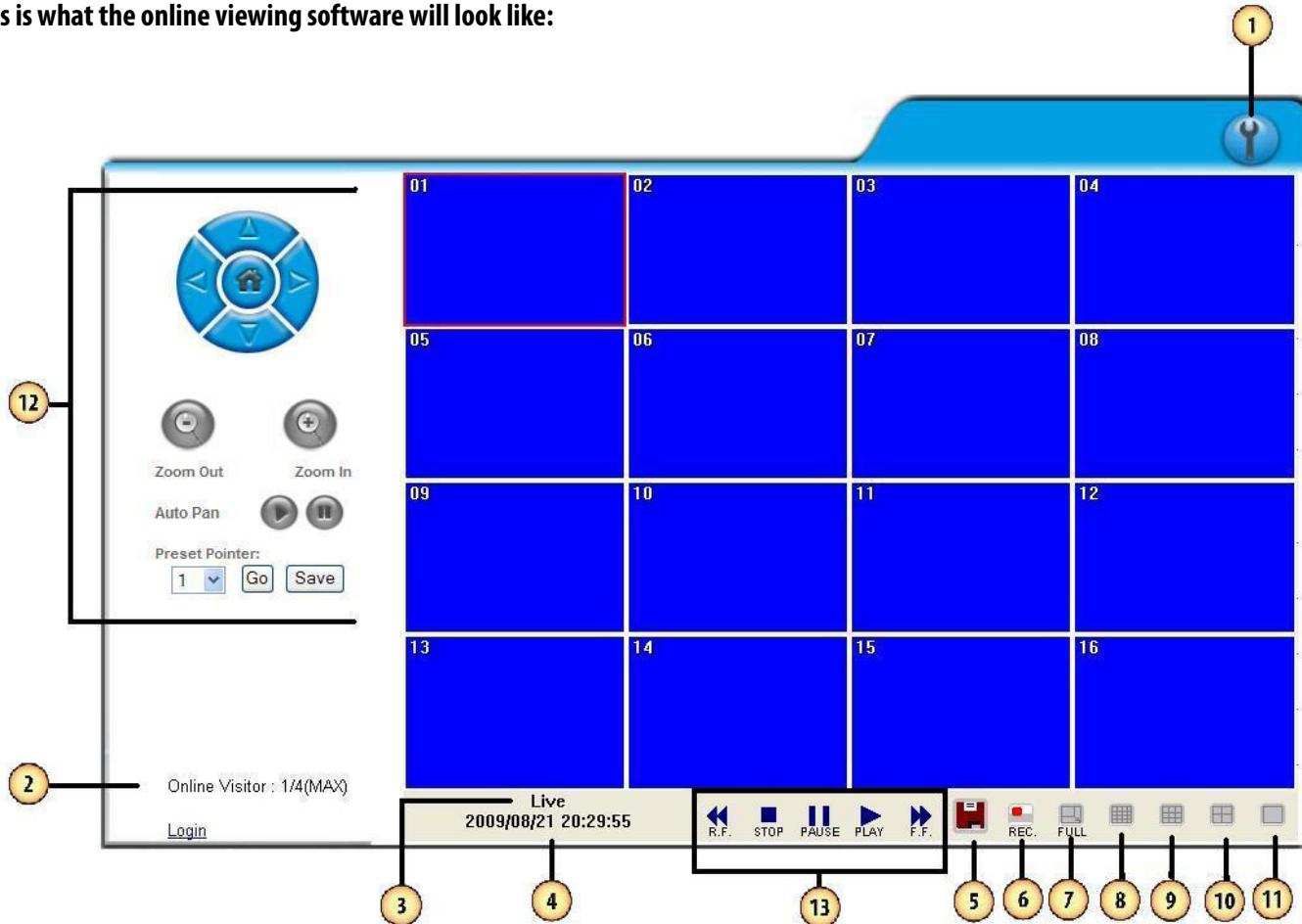
3. Click OK and the DVR software and footage will pop up.

Note: If using a port other then 80, the port must be specified after your hostname

NETWORK VIEWING

Once you have your DVR set to view online, the software to view the footage differs from the software that is in the DVR. Please refer to the following instructions when viewing live footage online.

This is what the online viewing software will look like:



- 1. DVR Configuration:** When you click DVR configuration, it displays a Menu for you to change/review settings.
- 2. Online Visitors:** Displays how many visitors are viewing your camera system. The maximum connected is 4.
- 3. Mode:** Displays the current mode (Playback or Live). If in Playback mode the status will display the current playback control in use. (ex. if paused the status will say PLAYBACK PAUSE).
- 4. Date/Time:** Displays the date and time of the footage that is currently being displayed. If in Live mode the time will be the current time of the DVR. If in playback mode the time will display when the footage was recorded.
- 5. Download:** Use this to download backup footage onto your computer.
 1. Choose the Start and End Time.
 2. Press Save.
 3. Choose the location to save the backup footage.
 4. This will backup the footage in H.264 format to the desired location. Use the player to view the recorded footage.

NETWORK VIEWING

6. Rec: This will record the footage that is currently being displayed onto the desired save location on your computer. This will work in live mode or in playback mode. Press STOP to terminate the recording and view the saved footage. It will be saved in H.264 format and will require the player to view the recorded footage.

7. Full: Switch to full screen mode. In full screen mode you can switch between the single or quad screen mode, use the single camera button and quad screen button to switch between the two modes. Playback controls are not available in this mode. Full screen mode works for live footage and recorded footage. Press Esc on the keyboard or press the full screen button again to exit full screen mode.

8. 16 Screen View: View all 16 Cameras at once.

9. 9 Screen view : View 9 Cameras.

10. Quad Screen Mode: Switch the viewing mode to quad screen (4 cameras).

11. Single Camera Mode: Switch the viewing mode to single camera viewing mode.

12. PTZ Control:



Directional Keys –

Controls the direction of the PTZ camera. It can be moved Up, Down, Left, and Right. The home button will return the camera to the default camera position.



Zoom in / Zoom Out –

This will adjust the optical zoom of the camera to zoom in on the field of view or to zoom out from the current field of view.

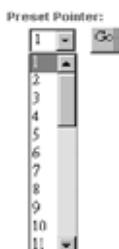
Auto Pan



Auto Pan –

Most PTZ cameras can be configured to automatically Pan from left to right and back again. Press the play button to begin this mode. Press the Stop button to stop the auto pan.

Preset Pointer –



If your PTZ camera supports Preset positions the DVR can select one of the 32 preset positions and go directly to it. Save will save the preset position if supported. Please consult your PTZ manufacturer for information on compatibility.

You can set up to 32 preset points.

13. Playback Controls

The playback controls are as follows from left to right:



Rewind – Rewinds playback



Stop – Stops playback



Pause – Pauses Playback



Play – Plays footage



Fast Forward – Fast forwards playback

NETWORK VIEWING

ADDITIONAL OPTIONS:

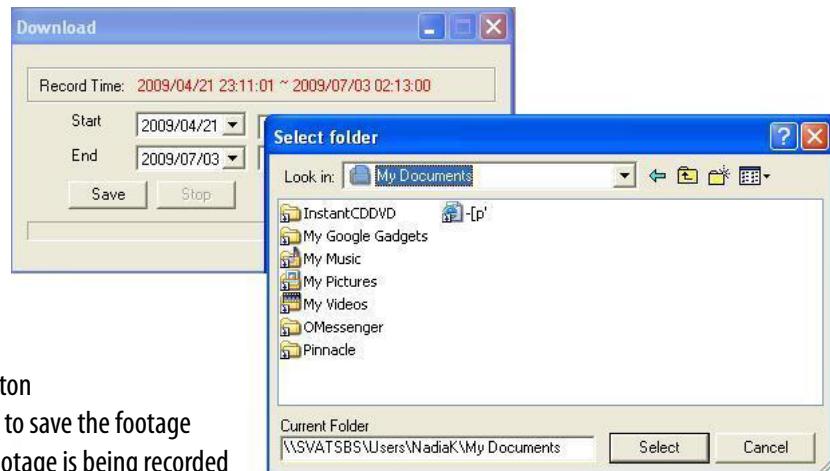
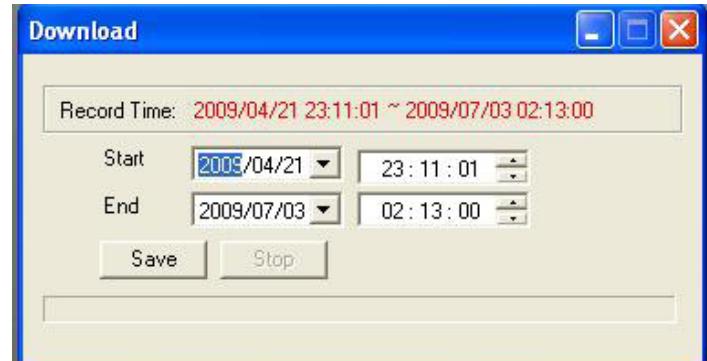
You can left click the mouse on the viewing windows to call up additional options. The extra options are described below:

1. **Snapshot:** Will allow you to save a single picture from the image.
2. **Performance:** You can select the image quality (high, medium, & low).
3. **Use Overlay:** Choosing this option allows you to speed up video display and reduce CPU loading time.
4. **Play Audio:** You can play audio by channel. (*Note: The included cameras do not support audio*).

Time Point Backup - Time point backup allows you to back up the footage you have recorded through online viewing.

To back up saved footage:

1. Click on the  icon.
2. Select the starting and ending time which you wish to back up.
3. Click the save icon.
4. It will take several minutes for the back up to be saved.
5. You will need to download the R6 Viewer software.
6. Click STOP to end the backup process.



RECORD

- To record the footage you are seeing click the record button
- You will be prompted to choose a file name and a folder to save the footage
- A small pop up screen will appear telling you that the footage is being recorded
- When you are done recording, click STOP in the small pop up screen

FULL SCREEN – Expands the viewing window to the full size of your monitor

SCREEN FORMAT – Change from quad, 9 camera, 16 camera and to single channel viewing.

NETWORK VIEWING

DVR CONFIGURATION OPTIONS



SYSTEM OPTIONS

The system information, network information and other options are displayed when this option is clicked.

System Information

Server Name: This is the name of your DVR. It will be displayed in the title of the web browser and can be used to distinguish your DVR from another.

MAC Address: The MAC address is the physical address of the network card that is installed in the DVR. This is a unique number and is used to identify the network connection on the Internet.

Language: To adjust the web browser language settings choose one of the 5 languages available under the server information tab.

Time Zone: This is set up using the DVR Menu. The field is not adjustable using the web interface. It should display the time zone that the DVR is located in.

NTP Server: This is the Network Time Protocol server IP address. By default this is 198.123.30.132. A different NTP server IP address can be used if desired.

Interval: The DVR will check and update the system time according to the NTP server.

Apply: Saves all your System Information settings.

User Management

Lists all the user accounts that have been added to the DVR and allows you to add more accounts onto the DVR.

Anonymous User Login : Determines whether or not the DVR will prompt the user to enter a username/password when connecting to the DVR over the Internet.

To add a user:

Input the username, the password, confirm the password and select which user group they will be a part of. The information will be displayed in a list below showing the following:

Username: Displays the user log on name.

User Group: Shows the user permissions on the DVR.

Modify: Can be used to change the password of the desired username.

Remote: Will remove the user account from the DVR web access.

These usernames and passwords are not the same as what is used to access the DVR locally. See Password Setup for information regarding local system passwords.

System Update

Firmware Version: Displays the current version of firmware loaded onto the DVR.

New Firmware (Browse): Browses to the location that the firmware update is stored.

Upgrade: Apply the new firmware version.

NETWORK VIEWING

Load Default

Load Setup From Default (Setting): Applies factory default settings. You will be prompted to confirm the restore.

Load Setup From: (Browse): Browse to the location where the system configuration settings are stored.

Load Setup From: (Setting): Applies the configuration settings from the backup file.

Backup Setup (Download): Prompts you to save the current configuration settings to your computer. Click save and choose the location to save your settings.

NETWORK OPTIONS

IP Setting

DHCP/Static: Choose whether your network uses DHCP IP address or a Static IP address. Generally most networks use DHCP automatically assigned IP addresses. See NETWORK SETUP for more information regarding DHCP/STATIC IP addresses.

- *If a DHCP IP address is configured is likely the IP address will change and require a port forwarding rule change*
- *Once assigned a DHCP address it is recommended to change the IP assignment to static to avoid this switch*

The information regarding the Static IP address can be obtained from the person who set up your network.

Port Assignment

Web Page Port: The port that is used to access the DVR over the web. By default (without specifying) Internet browsers automatically add :80 to the end of IP addresses. If using a web port other than 80 it will need to be specified when typing in the IP address.

RTSP Port: (Real Time Streaming Protocol) Used by mobile devices to view a single camera. Type the following into the URL search of your mobile device. The syntax for viewing the camera channels on a mobile device is RTSP://IPADDRESS/CH0#. By default the RTSP port is 554.

RTP START/END Port: (Real-time Transfer Protocol) used in conjunction with the RTSP port to view the streaming video footage on the mobile device. Each connected device using the RTSP port requires an additional 4 RTP ports. Please refer to the PORT FORWARDING section of the manual for more details.

Apply: Used to apply all the IP settings.

PPPoE

Enabled/Disabled: If your DSL Internet Service Provider prompts you to enter a Username and Password to connect to the Internet then this option needs to be set to enabled. Consult with your ISP if you are not sure if you need your PPPoE settings.

Username: Your PPPoE account username can be acquired from your ISP if required.

Password: Your PPPoE account password can be acquired from your ISP if required.

Send mail after dialed

Enabled: This will email the email address set up in the Mail & FTP section when the DVR dials in to the PPPoE server. Every time the DVR dials in it will acquire a new external IP address (Unless statically assigned by your ISP). The email will include the Subject: from the field below as well as information regarding the new connection. This will include the new IP address.

NETWORK VIEWING

DDNS

Enabled/Disabled: This will enable the DVR to connect to the DDNS provider listed below. If disabled the DVR will not update the DDNS website with the current information.

Provider: Choose the DDNS service provider for the DVR to connect to. See DDNS SETUP for more information on the service providers.

Hostname: This is the hostname set up for your DVR. Used to connect to your DVR through a web browser.

Username: This is the username configured on the DDNS service provider's website. This is usually different than your hostname.

Schedule Update: Defines how often the DVR will update the DDNS website with its current IP address information. This should not be set to less than 60 minutes as some DDNS providers may temporarily block the DVR.

State: Displays the current state of the DVR. IDLE indicates the DVR is not currently updating the DDNS website.

Apply: Saves all changed DDNS settings.

Mail & FTP

Motion: Enables or disables the DVR to send email notifications when motion is detected on one of the cameras. This requires motion detection to be set up in the MOTION SETUP menu. The DVR will email based on the parameters below.

Alarm: Enables or disables the DVR to send email notifications when an external alarm is detected. This requires alarm detection to be set up in the ALARM SETUP menu. The DVR will email based on the parameters below.

Mail Server: The name of a valid mail server. Contact your email provider or Internet Service Provider (ISP) for your mail server information.

Username: The username used to log into the senders email account. Contact your email provider or Internet Service Provider (ISP) for your mail server information.

Password: The password used to log into the senders email account. Contact your email provider or Internet Service Provider (ISP) for your mail server information.

Sender's Mail: The email address that the emails should originate from.

Receiver's Mail: The email address that the emails should be delivered to.

BCC Mail: Use the Blind Carbon Copy to discretely email a second email address. The email address in the Receivers Mail will not be informed of the BCC email address.

Event Subject: Enter the subject line to be included in all the emails that are sent regarding motion or alarm detection.

FTP Setting

Motion: Enables or disables the DVR to send email notifications when motion is detected on one of the cameras. This requires motion detection to be set up in the MOTION SETUP menu. The DVR will email based on the parameters below.

Alarm: Enables or disables the DVR to send email notifications when an external alarm is detected. This requires alarm detection to be set up in the ALARM SETUP menu. The DVR will email based on the parameters below.

NETWORK VIEWING

FTP Server:	Enter the Hostname or IP address of the FTP server.
Username:	A username that has the proper permissions on the FTP server to create directories and add files.
Password:	Enter the password for the username listed above.
Port:	Enter the port the FTP server uses. The default port for FTP sites is 21.
Path:	Enter the path to save the H.264 format video files.
Apply:	Saves your Mail and FTP settings.

Other Options

Player:	Allows you to download the DVR player software for your computer.
Mobile Viewer:	Allows you to set up and/or configure settings on the mobile online viewer.
DVR Setting:	Allows you to change settings that your DVR player has – the Menu works the same way as the Main Menu (instructions written above).

MOBILE PORT FORWARDING

This DVR is capable of being viewed on Windows Mobile and Symbian OS cellular phones. The protocol that is used to view is RTSP (Real Time Streaming Protocol). This will require additional port forwarding steps on your router.

- The ports that are required are listed on the RTSP SETUP section in the Menu of the DVR. By default the RTSP port 554 and an RTP port range of 1024-10000 need to be forwarded to the Internal IP address of the DVR

SETTING UP PORT FORWARDING

- Follow the port forwarding instructions listed in “Configuring your Router (Port Forwarding) to view the DVR Externally Pg. 52” using the proper RTSP and RTP ports

If using the default settings:

- Forward port 554 using TCP/UDP to the Internal IP address of the DVR
- Forward TCP and UDP port range 1024-10000 to the Internal IP address of the DVR
- If the router requires each port to be entered individually then set up port forwarding rules for 1024, 1025, 1026, 1027, etc... Each connected mobile device requires 4 open RTP ports to the DVR
- To have three mobile phones connected to any of the DVR's channel streams you will need to forward the first 12 ports from the RTP Port range (1024-1036) to the Internal IP address of the DVR

You can view an individual channel stream on your mobile device:

- To view a live video feed from one of the cameras connected to your DVR you will need to enter a specific URL. The syntax for viewing channel 3 is rtsp://IPADDRESS/CH03
- Fill in the spot (above) called IPADDRESS with the external IP address of your DVR network found on <http://www.whatismyip.org>

Note: Some phones do not require Port Forwarding for internal viewing over WiFi connection.

MOBILE PORT FORWARDING

From Your Mobile Device:

- Open up the web browser application
- Click Options and choose the option that will allow you to type in a URL
- Type in rtsp://74.11.213.177/CH03

This will pull up channel 3 of your DVR if port forwarding settings are set up correctly and your phone is compatible with this DVR.

MOBILE TROUBLESHOOTING

IF YOU CANNOT CONNECT

A great tool for testing to see if you have setup port forwarding correctly is by using the following website: <http://canyouseeme.org>. This website can only be used from a computer that is connected to the same network as the DVR. Open up this webpage and next to "What Port?" type in the port to test. It is important to test the HTTP port, RTSP port, and the start of the RTP ports.

CanYouSeeMe.org - Open Port Check Tool

This page will serve as a free utility for remotely verifying a port is open or closed. It will be useful for users who wish to check to see if a server is running or a firewall or ISP is blocking certain ports.

Your IP: 74.11.213.177

What Port?

If port forwarding is setup correctly you will see the following message:

Success: I can see your service on 74.11.213.177 on port (80)
Your ISP is not blocking port 80

If "Your ISP is not blocking" any of the required ports, your port forwarding and DVR are set up correctly. If the connection is refused or the connection times out follow the instructions below.

If the Remote Viewing does NOT connect it could be caused by any one of the following reasons:

1. The computer trying to access the DVR is not a genuine Windows PC.
2. The browser trying to access the DVR is not Internet Explorer 6.0 or later. Make sure the browser is Internet Explorer 6.0 or later and on a Windows PC.
3. Port forwarding is not setup correctly.

Review the section "CONFIGURING YOUR ROUTER (PORT FORWARDING)" and <http://www.portforward.com> for setup instructions.

4. A pop-up blocker is preventing the ActiveX controls from prompting you to install. Disable all pop-up blockers in Internet Explorer and try to access the DVR again.
5. Your router is blocking your computer from using the external IP address from the same network as the DVR. Try connecting to the external IP address from a remote computer that is not connected to the same network.
6. Port 80 is being blocked by your ISP (Internet Service Provider). Try changing the HTTP port to 2000. Port forwarding will need to be changed to use the new port.
7. A DSL modem is preventing the connection because it is on a different sub-network.

MOBILE PORT FORWARDING

If additional port forwarding steps are required, contact your ISP (Internet service Provider) to assist with bridging the modem and router together.

- Check all of your network connections and go through the above steps again to make sure a configuration error was not made
- You may have to configure PPPoE settings to match the settings provided to you by your Internet Service Provider (ISP). Consult your ISP for more information on your PPPoE settings

Note: DEFENDER technical support cannot troubleshoot modems, since changing these settings can potentially render your modem inoperable. Bridging or any other modifications to the modem will need to be completed by the ISP.

MOBILE VIEWING

Mobile Viewer Application

If the browser or media player on your mobile is not compatible with the DVR you can install the Mobile Viewer application to view a single camera on your mobile device.

The following instructions are loosely written for specific mobile devices and can be used as a guideline to install and operate the Mobile Viewer software. The installation instructions will vary depending on the make and model of your mobile device.



Sony Ericsson K608i



iPhone and iPod Touch Viewing



BlackBerry (Bold)

Note: This service uses data on your mobile device which may incur data charges through your cell phone service provider. Contact your cell phone provider to see if the cost for this type of data is covered.

MOBILE VIEWING

Sony Ericsson K608i

The first step is to copy the MobileViewer.jar file to a storage location on your mobile that can be accessed using the file manager on the mobile device.

1. Copy the MobileViewer.jar file from the CD or website onto the desktop.
2. Connect the mobile device to your PC to download the mobile software.
 - Open up My Computer. You should see your mobile device listed as a removable device
 - Open up the File Manager (This may vary on the model of your device)
 - Open up the Other folder (or another location that can be accessed using file manager on the mobile)
 - Copy the MobileViewer.jar from the desktop into this folder
 - Disconnect your mobile device from the computer



3. On your mobile device:
 - Open up the Menu
 - Open up File Manager folder
 - Open up the folder containing the MobileViewer.jar file. and click Install
 - Press Yes to begin the installation process
 - You will be prompted with a security warning message, this is expected
 - Click Yes/Continue to continue the installation
4. Once successfully installed go back to File Manager.
 - Go to Applications
 - Select “Mobile Viewer” to launch the software on your phone
 - Press Options
 - Select Site List
 - Click on Add



MOBILE VIEWING

Name: This is arbitrary and can be named to your liking.

Host: This is the IP address for your DVR. If connecting using the 3G or other wireless network, the proper ports must be forwarded on your router. See Port Forwarding for instructions.
Ex. Host: 74.11.213.177.

Port: This is the http port used by the DVR. By default the port is 80.

User: The user account used to access the DVR. By default the user is "admin".

Password: The password associated with the user entered in the line above. By default the password for the "admin" account is "admin".

Image Size: QCIF (176 x 144 pixels).

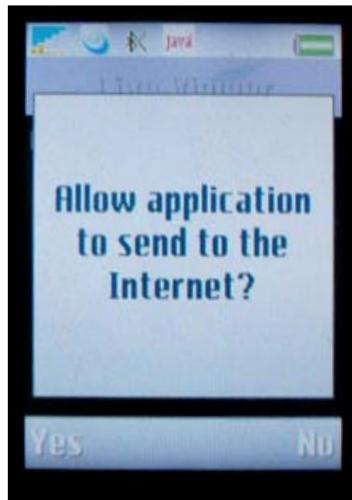
Channel: The Input Channel you wish to view (1-4).

Fit to Screen: Expands the image to fit the screen, can be set to Yes or No.



Click OK To Save, or click Options > OK.

You will return to the site list.



5. Highlight the desired site you wish to connect to.

- Click Options
- Click Select
- You will return to the live viewer and the screen should display "Current Site: NAME, Disconnected"
- Click Options
- Click on Connect
- *You should be prompted that the mobile device is trying to make a connection to the IP address of the DVR*
- Click Ok or Allow to allow the connection

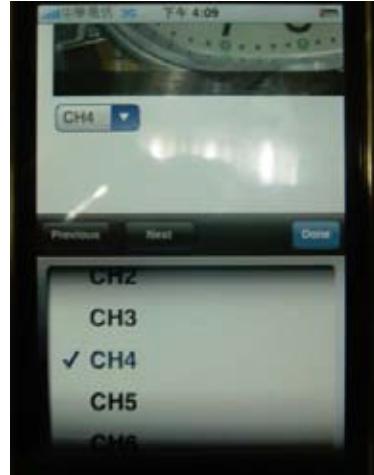


If all your settings are correct you will view the channel of the DVR that you set in the site list settings.

MOBILE VIEWING

iPhone and iTouch Viewing (Safari)

Be sure that the mobile device that is connected can connect to the internet via cell phone network or Wi-Fi. If connected to the same Wi-Fi network as the DVR the iPhone can access the DVR cameras via the LAN (internal) IP address or the WAN (external) IP address.



1. Open up Safari on the iPhone or iTouch.
2. In the address bar type in:
<http://IPADDRESS/iphone.html>.
Ex. <http://74.11.213.177/iphone.html>

You will be prompted to enter a username and password. By default the username/password is admin/admin.
3. You can change each single camera you are viewing by selecting the active camera from the drop down menu below. Channels 1-16 are available.

BlackBerry (Bold)

The first step is to copy the MobileViewer.jar file to a storage location on your mobile that can be accessed using the file manager on the mobile device.

The following steps have been created with the BlackBerry Bold. Other models may result in different file locations or results.

Copy the MobileViewer.jar file from the CD or website onto the desktop.

1. Connect the BlackBerry to the computer using a USB cable.
 - If prompted turn on Mass Storage Mode and enter the password
 - Open My Computer
 - You should see your mobile device listed as a removable device
 - Open the removable device. Copy the MobileViewer.jar file from the desktop onto the BlackBerry or one of the subfolders. (The folder needs to be accessible on the BlackBerry)
 - Disconnect the BlackBerry device from the computer



MOBILE VIEWING

2. On the BlackBerry:

(Setting may not be available depending on cell phone service provider)

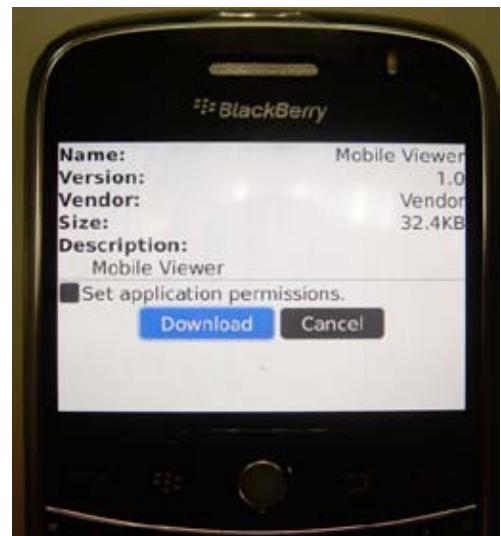
- Open up the Menu
- Open Options/Settings
- Open Advanced Options
- Click on TCP
- You must set your APN settings according to your specific Cell Phone Service Provider. Contact your cell phone service provider for the APN, APN username, and APN password



3. Open up Media:

- Click Options
- Click Explore
- Select Device Memory (if that is where the file was saved)
- Navigate to the folder containing the MobileViewer.jar file
- Click Download
- Press Yes to begin the installation process

You will be prompted with a security warning message. This is expected, Click Yes/Continue to continue the installation



4. Once successfully installed click on "downloads." Mobile Viewer should be listed along with other downloaded programs.

- Select "Mobile Viewer" to launch the software on your phone
- *If using a different model of BlackBerry, the Mobile Viewer may be listed with all of the other applications on your phone. Check the Main Menu for Mobile Viewer*

5. Once the software has loaded:

- Press Options
- Select Site List
- Click on Add



MOBILE VIEWING

The following will be displayed:

Name: This is arbitrary and can be named to your liking.

Host: This is the IP address for your DVR. If connecting using the 3G or other wireless network the proper ports must be forwarded on your router. See Port Forwarding for instructions. Ex. Host: 74.11.213.177.

Port: This is the http port used by the DVR. By default the port is 80.

User: The user account used to access the DVR. By default the user is "admin."

Password: The password associated with the user entered in the line above. By default the password for the "admin" account is "admin."

Image Size: QCIF (176 x 144 pixels).

Channel: The Input Channel you wish to view (1-4).

Fit to Screen: Will expand the image to fit the screen. Can be set to Yes or No.

Click OK to save. Or click Options > OK > You will return to the site list.

6. Highlight the desired site you wish to connect to.

- Click Options
- Click Select
- You will return to the live viewer and the screen should display: "Current -Site: 1NAME, Disconnected"
- Click Options
- Click on Connect

You should be prompted that the mobile device is trying to make a connection to the IP address of the DVR.

- Click Ok or Allow to allow the connection.



Note: If all of your settings are correct you will view the channel of the DVR that you set in the Site List Settings.

TROUBLESHOOTING

My DVR has no power	<ul style="list-style-type: none"> Check the power cord connection to the DVR and the outlet and ensure that the DVR has power
There is no way to turn the DVR off	<ul style="list-style-type: none"> The DVR is set to run as long as it is plugged in, if you would like to turn it off you have to unplug it
I cannot hear recorded audio when playing back	<ul style="list-style-type: none"> Are audio equipped cameras being used? Please note that audio equipped cameras are not included with this DVR system Make sure that the audio cable is properly connected and inserted in the Audio IN and that the other end is plugged into a microphone or audio supported camera. Please note that only one channel can record audio Make sure the volume is turned up on your speaker/amp
Playback video is choppy	<ul style="list-style-type: none"> Check the FPS (Frames Per Second) rate for each camera that is recording choppy video. Refer to your settings in the Record Menu. Cameras with a higher FPS (30 is the highest) will record more fluid video than cameras set to a lower FPS. For more information on making changes to the Record Menu, see Pg. 63
Timer recording is not working properly	<ul style="list-style-type: none"> Check to see if you have the proper time set on your DVR. Refer to the instruction manual under Time Setup Double check your schedule record times – you may have it set on the no record function
My PTZ camera (not included) is not working. The picture is displaying, but I cannot control the camera	<ul style="list-style-type: none"> Verify the channel, protocol, and baud rate with the PTZ camera's instruction manual or the manufacturer of the camera Verify the PTZ camera is connected to the proper PTZ inputs
I have lost video footage	<ul style="list-style-type: none"> This could be from lost footage due to tampering of cameras, make sure to check all connections are secure and set properly The hard drive overwrite may be disabled, this will make the recording stop when the hard drive is full. To change this go to the Hard Drive set up and turn Overwrite Enabled on
I plugged a mouse into the USB port but it's not working	<ul style="list-style-type: none"> The SN501-16CH's mouse will only work when plugged into USB port on the right side
The Hard Drive is filling up too quickly	<ul style="list-style-type: none"> Check your FPS that you are using, if you are using a high number of FPS then the hard drive will fill up faster. Try lowering your FPS for some cameras Check the video quality you are using – If you are using a high video quality then the hard drive will fill up quicker
The camera's image appears on screen, but nothing is recorded	<ul style="list-style-type: none"> Check to see if the camera is in motion detection mode. If in motion detection move and there is no movement happening no footage will be recorded If there is no symbols or icons in the top right corner, it means you have set your schedule to have the camera cease recording
Cannot view DVR remotely using port 80	<ul style="list-style-type: none"> Try using a different port other than 80. Make sure you change this port on the DVR settings as well as port forwarding settings Try going to www.canyouseeme.org to find available open ports that you can adjust for your DVR View the Video Networking guides on www.defender-usa.com

TROUBLESHOOTING

Cannot view the DVR through a remote Internet connection	<ul style="list-style-type: none">• Make sure the router is properly plugged in and setup• Make sure the DVR is properly plugged into the router• Repeat the steps in the networking guide to make sure everything was properly set up• If none of the above steps try contacting your ISP to make sure they are not blocking port 80• View the Video Networking guides on www.defender-usa.com
Cannot view DVR on the computer	<ul style="list-style-type: none">• Verify the following while referring to the included networking guide• Make sure you are entering the proper IP address of the DVR. You will enter the Internal IP address into the Internet Explorer address bar when the computer is connected to the same router as the DVR• You will enter the external IP address into the Internet Explorer address bar when the computer trying to access the DVR is not connected to the same router. This will require an Internet connection• Port forwarding will need to have been setup according to the networking guide• Follow the instructions found on www.portforward.com for detailed instructions or contact your router manufacturer for assistance with port forwarding on your particular model of router• Make sure you are logged into the computer as an administrator to install the required application and ActiveX controls
The color on the camera picture is too purple, blue, etc	<ul style="list-style-type: none">• Try adjusting the settings in the camera setup screen to improve/change the image quality. Unusual coloring can also be caused by the type of lighting that is used. The cameras do not react well to halogen lighting. Try focusing the cameras away from these lights• Make sure that the cameras are not pointing directly at a light source such as a lamp or a sunny window
My browser keeps freezing	<ul style="list-style-type: none">• Make sure you have an up to date browser and that the proper ActiveX options are selected. If they are, you may need to re-install your browser. (Internet Explorer version 6 or higher)

Camera Troubleshooting

I cannot see at night with my IR night vision cameras	<ul style="list-style-type: none">• The night vision turns on automatically when light levels drop. Try the camera in a pitch black setting. The areas that it is in may have too much light and may not activate the sensor• The LEDs need to reflect off an object to view it in the dark so make sure there is an object for it to reflect off within reasonable range
My camera is not displaying any image	<ul style="list-style-type: none">• Verify the connections are snug and tight fitting. Disconnect and reconnect each connection. 4pin/4pin, power/power, RCA/RCA• Make sure the power adapter is plugged in to an active electrical outlet• If everything is connected, cup your hands around the camera lens and you should see the red LEDs illuminate. Make sure it is dark enough to activate the light sensor• If the LEDs do not illuminate, try switching the power adapter with a working camera's power adapter. This will indicate if it is the power adapter which needs to be replaced• If no power/video signal even with the new power adapter, connect the camera that is in question to a working cable. (Disconnect a working camera and connect the camera in question to that cable set) The camera should function correctly. If the camera functions correctly the test indicates that there is a bad cable• Verify the pins on the 4PIN DIN connection are not bent and are being properly inserted to the proper connector

TROUBLESHOOTING

My camera is being displayed in black and white	<ul style="list-style-type: none"> • Night vision mode displays in black and white. Make sure there is enough lighting in the room to check if color is working • Power cycle the DVR by unplugging the DVR with a camera still connected. Leave for 10 seconds and power on again. If the cameras still display in black and white try replacing the power supply for the B/W camera with a properly working camera's power supply
Lines displayed on screen / scrolling lines / electrical noise / interference	<ul style="list-style-type: none"> • Try replacing the power supply with a properly working camera's power supply • Test the camera out on a different 60ft cable set. The video signal could be getting disrupted by a different power source. If the cables are being run parallel to electrical lines or near other electrical devices try and reposition the camera (and cable) to avoid these sources
The camera is not displayed on the Live Display screen; it is just 4 blue boxes	<ul style="list-style-type: none"> • Check all connections to make sure they are secure and properly connected • Check your power supply to ensure that the camera is powered up

SPECIFICATIONS

Factory Model#	HDR-16RJ
Display	16CH DVR
Functionality	Triplex
Video Compression	H.264
Wireless Frequency	N/A
Number of cameras supported	16
File Format	H.264
Resolution	NTSC: 720 x 480 / PAL : 720 x 576
Recording Frame Rate	240FPS (Fully Adjustable)
Recording Time	Max 8 Years with 500GB HDD
Recording Resolution	(Half D1)NTSC : 720 x 240 up to 120 PPS (Half D1) PAL : 720 x 288 up to 100 PPS
Recording Method	Record as Each, Playback in MultiCamera or Full Screen
Recording Qualities	Low, Medium, High, Best
Recording Modes	Manual / Schedule/ Alarm (motion, alarm, video loss)
Recording Media	HDD (Backup via USB, USB CD/DVD & Ethernet)
Storage Capacity	500 Gb (Max 1.5 Tb)
Autostart Recording	Yes
Auto Resume Recording	Yes (watch dog)

HDD Type	Internal SATA
Removable HDD	No
Video Format	NTSC/PAL
Video Loss Alarm	Auto Detect Alarm
Video Inputs	16 CH Composite BNC
Video Display Output	1 CH Composite BNC(Monitor), S-Video, VGA
Audio Input	1 CH
Audio Output	1 CH
Live Resolution	NTSC: 720 x 480 / PAL : 720 x 576
Audio Bitrate	32 kbps
Live Frame Rate	16 X 30 Frame / Sec
Live Viewing	Full, 4, 9, 13, 16 ZOOM, SEQ
Network Protocol	TCP/IP, DDNS, DHCP, PPPoE, SMTP, FTP, RTSP, RTP
Network LAN IP	Static, Dynamic
Network Connection	10/100 BaseT Ethernet (RJ-45)
Back-up	USB & Ethernet
Play Search Mode	Time / Date, Event list
Play Speed	X2 X4 X8
Pan/Tilt/Zoom	Yes
Play Mode	1 (Full)/ 4 / 9 / 13 /16
OSD and System Menu Display	Yes

SPECIFICATIONS

OSD Language Display	Multi-Language
Time and Date Stamp Display	Yes
Password Protection	Yes, Menu Password, Clear HDD Password, Network
Adjustable Screen Settings	Color, Brightness, Contrast, Hue
File Transfer	Ethernet, HDD, USB
Operating System	Linux
Disk Full Warning	Yes
Automatic Overwrite Option	Yes
Playback Navigation	Rewind, Play, Pause, Stop, Forward
LED Indicators	Play, Power, HDD, REC
Housing Material	Aluminum
Housing Color	Black
Cooling	Fan Based
Power Input	12V DC 4.16A
Power Consumption	22W (Without HDD)
Power Adapter Input	100V 50/60Hz ~ 240V 50/60 Hz
Operating Temperature	0°F~104°F
Alarm Sensor Inputs	Yes, 16
Alarm Sensor Connection	Terminal
Dimensions	11" (w) x 3.15" (h) x 10.3" (d)
Weight	9 lbs
Other	
USB Port	For Firmware Upgrade, Backup, Mouse
Remote Control	Yes
Supported Peripherals	USB Mouse, IR Remote Control, USB Flash Drive, USB CD/DVD Burners
Alarm Sensor Inputs	16
Alarm Relay Outputs	Yes
PTZ Protocols	Pelco-D, Pelco-P, Hunt, Li-lin, Dynacolor, Eyeview, EP-Pelco-D, EP-Pelco-P

System Requirements	
Mac Compatible?	No
PC Requirements for Software CD	IE browser
CPU	1 GHz or above
RAM	256MB or above
OS	Microsoft Windows 2000/ XP/Vista

CAMERA SPECIFICATIONS

MODEL#: SP301 - C

Camera Type	Weatherproof Color IR CCD Camera
Image Sensor	1/4" Color SHARP CCD
Resolution	420 TV Lines
Outdoor Use	Yes
IP Rating	IP65
Focal Length	3.6mm
Focus Type	Fixed
Optimal Focal Distance	20 ft
Night Vision	Yes
Number of IR LEDs and Range	12, up to 15ft
IR LED Control	Automatic (CDS Sensor)
Min. Illumination	0 lux
IR Wavelength	850nm
Video Output	4 PIN DIN to RCA
TV System	NTSC
Microphone	No
Motion Detection	No
Viewing Angle	60 Degrees, built into DVR
Electronic Shutter	1/60 ~ 1/100000 sec
BLC	No
AGC	Automatic
ELC	Automatic
Line Lock	No
Iris Control	No
Gamma Correction	>0.45
White Balance	Automatic
Sun Shield	Yes
IR Cut Filter	No
Housing Material	Anodized Aluminum
Housing Color	Black
Signal/Noise Ratio	>48dB
Camera Bracket	Yes
Lens Mount type	M12

Pan/Tilt/Zoom	No
Operating Temperature	-10° ~ 60°C / Degrees
Operating Humidity	98%
Camera Power Input	DC 12V 300mA
Power Adapter Input	120V 60Hz
LED Power Indicator	No
Dimensions	4.7"(L) x 2.5"(W) x 2.5"(H)
Weight	Around 325 g

Disclaimer:

The SN501-16CH has been designed to come equipped with SP301-C cameras, depending on the product "kit" you have purchased, your camera type or camera specifications may vary.

Feature Notes

1. To see which other smart phone devices are compatible, please visit our website: www.defender-usa.com.
2. Requires broadband router and broadband Internet connection—not included. Internet Explorer is required.
3. Video playback software is not Mac Compatible.
4. Recording capacity may vary based on recording resolution and quality, lighting conditions and movement in the scene. Based on a 500GB hard drive, using lowest quality settings.
5. Not for use in direct exposure to water, rain or snow.
6. IR illumination range up to 15ft (4.5M) under ideal conditions. Objects at or beyond this range may be partially or completely obscured, depending on the camera application.
7. USB flash drive and external hard drive not included.
8. Maximum 30 FPS (frames per second) per camera. Total 240 FPS for all cameras.

CAMERA MANUAL



SP301-C Camera

1. **Sun Shield:** Helps prevent glare from bright lights
2. **Infrared (IR):** LEDs Allows the camera to see in the dark up to 15ft away.
3. **CDS Sensor:** Turns on the infrared LEDs when it gets dark
4. **Camera Housing:** Made of anodized aluminum to prevent rust
5. **Camera Mount:** Allows the camera to be desk or wall mountable
6. **4 PIN DIN Female Connection**

IMPORTANT INFORMATION

While this camera is weatherproof, it is not waterproof. Please do not install it in areas that receive direct rain or under eaves through draining spots. Do not cut the DC power cable of this camera to fit with another power source. Do not cut the video connection wire to fit with a different video connection type. Any unauthorized modifications will void your warranty.

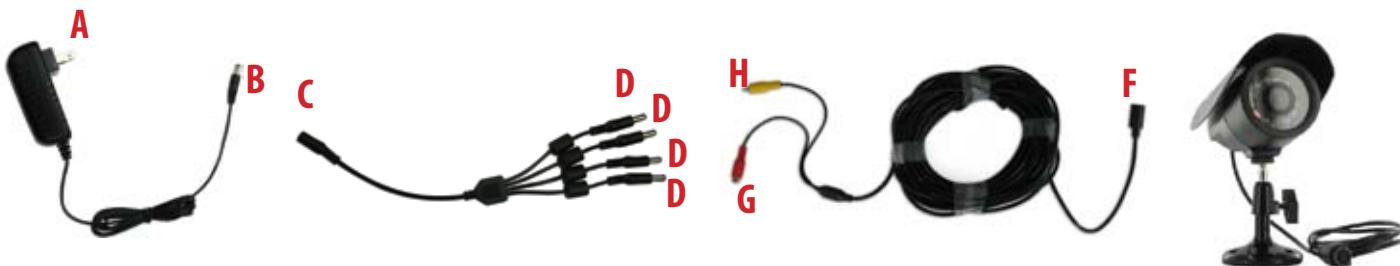
One to Four Power Supply Cable

1. **Female 12V Connection**
2. **Camera Power Supply Ports**

The One to Four power Supply Cable allows you to plug four cameras into one power source, saving you time and space.

USING THE ONE TO FOUR TO ONE POWER SUPPLY WITH CAMERAS

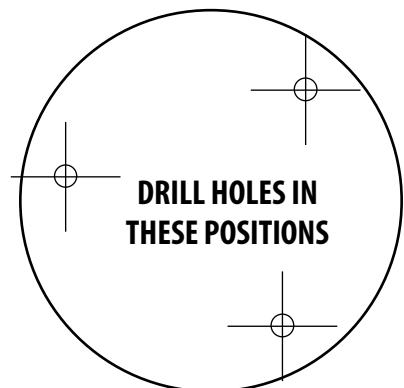
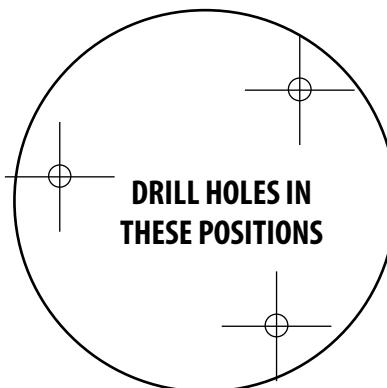
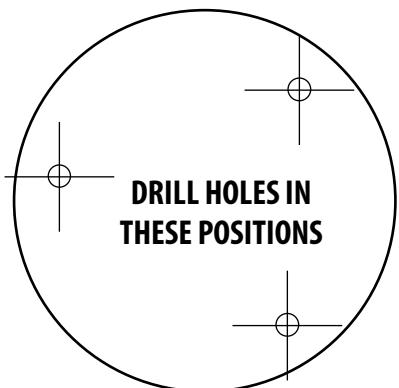
Wiring Diagram



Wiring Instructions

1. Plug 12V adapter (A) into electrical wall outlet or surge protecting power bar.
2. Plug the single end (female 12 V connection) of the four to one power supply (C) into the male end of the 12V adapter (B).
3. Connect the 4PIN DIN female connection on the camera (E) into the 4PIN DIN male connection on the 60ft video/power wire (F).
4. Plug the red adapter from the 60ft video/power wire (G) into one of the ports of the four to one power supply (D).
5. Connect the RCA Video from the 60ft video/power wire (H) into the Channel/Camera inputs on your DVR or monitor.
6. Repeat for all cameras (using two, four to one power supply cables for all 8 included cameras).

DRILLING TEMPLATE



.....Tear Here.....

NOTES

A large, empty rectangular area for notes, enclosed in a thin black border.

NOTES



VISIT US ON THE WEB!

- Product Information
- Specification Sheets
- User Manuals
- Software Updates
- Quick Start Guides
- Firmware Upgrades

www.defender-usa.com

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